Rock Products
THE INDUSTRY'S RECOGNIZED AUTHORITY
NOVEMBER
1958

How TV improves process control in cement plant

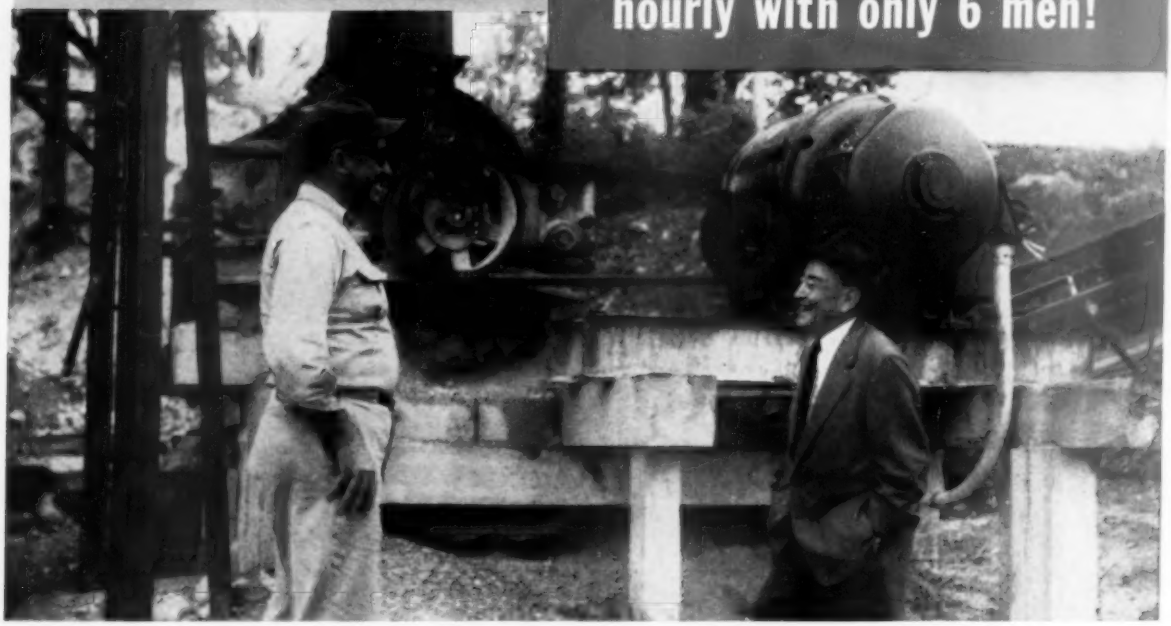
page 74

Hard facing cuts maintenance costs

page 112

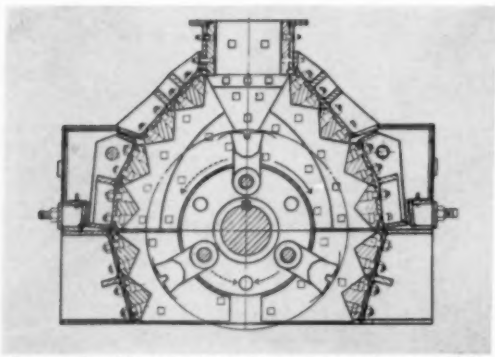
WILLIAMS REVERSIBLE IMPACTOR

Up to 250 tons of aggregate hourly with only 6 men!



Illustrated is Williams No. 445-X Reversible Impactor powered by 250-HP motor. Preceded by a 30 x 42 jaw crusher and apron feeder, and followed by gradation screens in closed circuit, up to 250 tons of aggregate per hour was obtained to meet these Tennessee Highway Dept. specs.:

100	Percent	1"	Passing
80-95	Percent	¾"	Passing
50-85	Percent	⅜"	Passing
36-65	Percent	No. 4	Passing
20-43	Percent	No. 16	Passing
10-21	Percent	No. 100	Passing



Cross section of Impactor. Note wide gap between hammers. High drop chute feeds rock between hammers so it is thrown against impact blocks to set up a ricochet action. Center impact blocks are adjustable with relation to hammers.

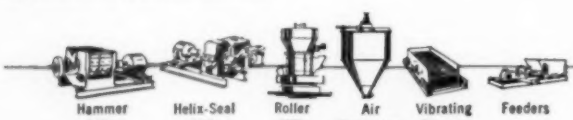
The beaming smile on Clarence Duke, co-owner of Burns Stone Company of Burns, Tennessee, indicates his complete satisfaction with the amazing output of his Williams Reversible Impactor. Hitting the Tennessee Highway Department's tightest aggregate specification right down the middle on the "fine" side, the Williams Impactor produced an average of 200 tons-per-hour, frequently reaching *250 tons hourly with only 5 men and Mr. Duke*. Performance was so gratifying he ordered another Impactor for the Burns Company plant at Cumberland Furnace, Tenn. Ben Ferguson, at right, is representative for Southern Machinery Company, Williams' distributor for middle Tennessee and north Alabama, which designed and furnished equipment for the Burns' plants.

HIGHER OUTPUT of BETTER PRODUCTS at LOWER COST

- **100% product sizing** is assured with a Williams Impactor
- **Lower upkeep expense.** No close clearances of impact hammers and blocks have to be maintained.
- **Reversible rotor** doubles life of wearing parts. Eliminates manual turning of hammers.
- **Completely open discharge** allows unrestricted flow of finished material. Closed circuit operation takes out crushed material as fast as made. No over-crushing or grinding.
- **Accessibility-plus!** Easiest of all crushers to service. Complete rotor removable without disturbing any feed mechanism.
- **Heavy steel plate frame**—forged steel oversize rotor shaft—extra heavy alloy steel hammers and impact blocks—many other exclusives insure longer, lower-cost operation.

Ask for brochure

WILLIAMS PATENT CRUSHER & PULVERIZER CO.
2706 North 9th Street — St. Louis 6, Mo.



WILLIAMS
CRUSHERS — GRINDERS — SHREDDERS
Oldest and Largest Manufacturers of Hammer Mills in the World

Enter 1078 on Reader Card

CAST BUCKETS are also available in longer-lasting Promal for longer life under severe abrasive conditions

Select your cast elevator bucket from

LINK-BELT's complete long-life line

Greater efficiency . . . longer bucket life . . . fewer shutdowns—you get all these benefits when you choose the Link-Belt cast bucket that matches your elevator and the materials you handle. They're available in six styles—each in a full range of sizes to meet capacity requirements.

Smooth surfaces, well-rounded corners and proper proportioning assure quick filling . . . fast, clean discharge. In addition, Link-Belt buckets are cast from high-grade malleable iron . . . reinforced at points of greatest stress to resist wear and distortion. For facts on the type and size that's best for your operation, see your Link-Belt office or authorized stock-carrying distributor. Or write for your copy of Book 2465.

LINK-BELT

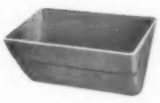
CAST ELEVATOR BUCKETS

LINK-BELT COMPANY: Executive Offices, Prudential Plaza, Chicago 1. To Serve Industry There Are Link-Belt Plants, Sales Offices, Stock Carrying Factory Branch Stores and Distributors in All Principal Cities. Export Office, New York 7; Canada, Scarboro (Toronto 13); Australia, Marrickville (Sydney), N.S.W.; South Africa, Springs. Representatives Throughout the World. 14,728

STYLE A

This type is used on elevators handling coal, cement, chemicals and similar materials.

STYLE AA

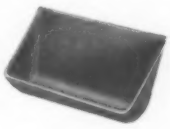


Designed to handle same materials as Style A buckets. Has reinforced lip for added wear life.

STYLE AA-RB
(Reinforced Back)

Elevate same types of materials as Style AA buckets. Designed for extra-heavy service conditions.

STYLE B

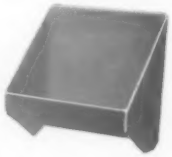


These buckets are used extensively for handling coke, ores, stone and similarly coarse materials.

STYLE C

Designed for handling clay, salt, finely pulverized ores, and other sticky materials.

CONTINUOUS



Used for clean, gentle handling of coal, sand, gravel, crushed stone and other dry materials.

Enter 1001 on Reader Card

CONTENTS

FEATURES

DEPARTMENTS

ROCK PRODUCTS is published monthly by MACLEAN-HUNTER Publishing Corporation, 79 W. Monroe St., Chicago 3, Illinois: P. D. Allen, President; Copyright, 1958, by Maclean-Hunter Publishing Corporation. Second-class postage paid at Chicago, Ill. and at Long Prairie, Minn.

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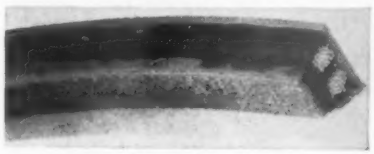
B.F.Goodrich V belt briefs

TIPS ON THE CARE, MAINTENANCE AND SELECTION OF V BELTS FOR INDUSTRY

What caused this V belt failure?



Appearance: V belt sidewall and bottom worn away.

Cause: Abrasion. Foreign material and rust in sheaves wore away sidewalls, causing belt to drop to bottom of groove.

Prevention: Use dust guards to protect against abrasion.

Use canvas covers to protect adjustment bolts

Rusty or corroded adjustment bolts at motor base make it difficult to adjust or install a V-belt drive. A simple way to overcome this problem is to cover bolts with a piece of heavy canvas. Then when an adjustment is needed, just lift up the protective canvas cover—adjustment bolts and locking nuts work like new.

HERE'S WHY GROMMET BELTS GRIP BETTER—*See all the rubber surrounding the twin grommet in this B.F.Goodrich belt? It has more rubber in relation to belt size than any other belt. Because the grommets are endless, have no stiff overlapping cords, they are more flexible, grip the sheaves better. Size for size, Grommet belts give ⅓ more gripping power with less slip. This stronger, more resilient construction gives the B.F.Goodrich Grommet belt 20% to 50% longer life. Yet it costs no more than ordinary belts.*

What do V belt sizes mean?

V belts are marked with a letter which indicates their width across the top and a number to indicate their length. Standard belt widths are coded: A (½"), B (21/32"), C (⅞"), D (1¼"), and E (1½").

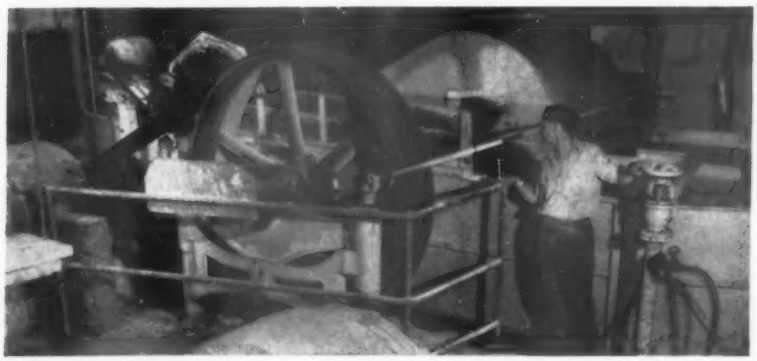
All high capacity V belts will be identified by the addition of the letter "P" as soon as present stocks are used up. For example, AP, BP, CP, DP and EP.

B.F.Goodrich V belt manual

Your B.F.Goodrich V belt distributor can give you a new maintenance manual that tells you how to get longer life from your V belt drives. Its 12 illustrated pages contain information on how V belts work, how to select V belts that fit, how to install, how to keep them running, and how to spot trouble.

Ask a factory-trained specialist

For help in selecting V belts for any kind of service, call the man who is a specialist in V belts—your B.F.Goodrich distributor. He can help you cut costs by getting longer life from your V belt drives. *B.F.Goodrich Industrial Products Company, Dept. M-469, Akron 18, Ohio.*



A BELT SNAPPER—*This pulp mixer in a paper plant runs 24 hours a day, 7 days a week. Belts used to drive the mixer couldn't handle the job. Motor bearings were burning out, belts were snapping under the shock load. Then a B.F.Goodrich distributor suggested Grommet belts to stand the jerks and hard pulls. When this picture was taken, belts had been installed nine months and are still going strong.*

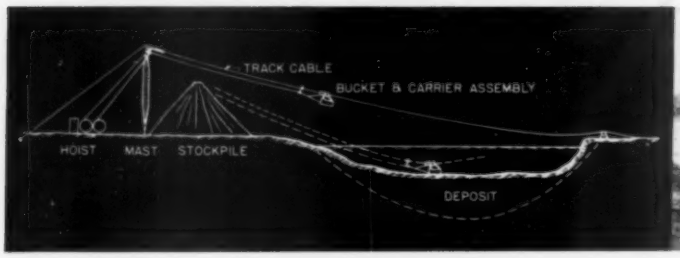
B.F.Goodrich V belts

Enter 1112 on Reader Card

FROM PIT TO STOCKPILE...

Dig and Haul at Lowest Cost with a Sauerman Slackline

DIGS AND HAULS—New Sauerman Slackliner Bucket is especially designed for tough digging. It inhauls at high speed, dumps automatically, and returns to digging point by gravity.



STOCKPILES MATERIAL—Regardless of long hauls, the Slackline builds a large surge pile to allow charging the plant at any desired rate. Plenty of material is in ready reserve for seasonal or unexpected increases in schedule.

Operating costs as low as 8¢ per yd. for labor, power and maintenance are reported by Slackline Cableway owners when digging free-caving material at average depth and haul distances.

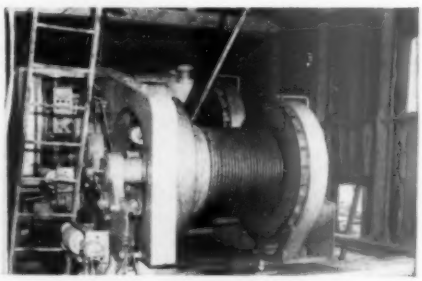
These low costs are achieved by using just one machine—the new Sauerman Slackline Cableway. Multiple equipment is not needed to supply your required tonnage. For example, on an average haul and digging depth, a single medium size machine will charge a 200 tph. plant.

The high Slackline mast permits building a large pile which can supply plant demands through a plate feeder and tunnel conveyor, front-end loader or clamshell. The new Sauerman torque converter diesel-hoist automatically matches power to load demands and is designed for continuous duty. Fluid drive cushions out shock loads to reduce fuel and maintenance costs, extend cable life.

Increasing land values and depleting resources make it necessary to get all the material out of your deposit. You can do this with a Sauerman Slackline. The machine will dig from ground level to deep under water and keep your plant running additional years at the lowest possible operating cost. Several pits are now operating Slacklines on 1000-ft. spans with average hauls of 500 to 700 ft. and from 100-ft. depths.

Write or call, giving your tonnage requirements, depth and length of deposit—if available. We will promptly supply more information on Slackline Cableways, and show you how to *save with a Sauerman.*

CONTROL IS REMOTE, EFFICIENT AND SAFE—Control station can be conveniently located at any strategic point in plant area. Operator can watch entire operation. Fatigue is minimized and personal danger eliminated.



TORQUE CONVERTER INCREASES PRODUCTION, CUTS MAINTENANCE—Now available, the new Sauerman Torque Converter Hoist automatically matches power to load, provides a smooth and steady flow of material, reduces fuel, maintenance and cable costs.

SAUERMAN BROS., INC. 630 SO. 28th AVE. BELLWOOD, ILL.
Linden 4-4892 • Cable CABEX—Bellwood, Illinois

Crescent Scrapers • Slackline and Tautline Cableways • Durolite Blocks

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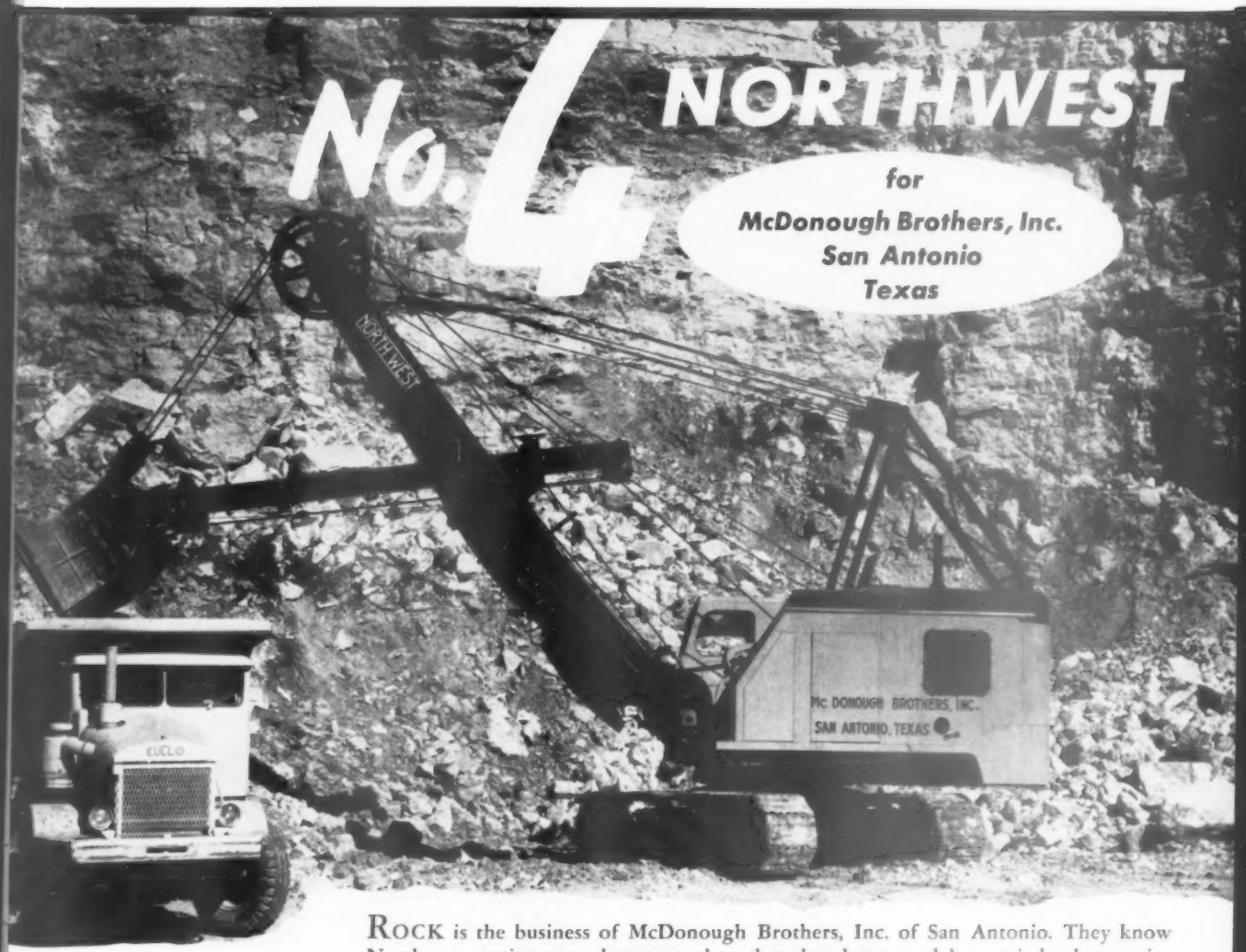
Enter 1003 on Reader Card



ROCK is the business of McDonough Brothers, Inc. of San Antonio. They know Northwest equipment—but more than that they know and have tried other equipment. It is significant that when they needed another new shovel a Northwest 80-D, 2½ yd. machine was the choice.

Your Northwest is a *real* Rock Shovel. It brings you that outstanding quality of always being ready to go. *We hear it everywhere and Northwest users will tell you so!* It's the steady hour after hour on the job that produces yardage.

Northwest design begins from the bottom up for rock work—cast steel machinery bases and machinery side frames, crawlers that give self-cleaning action and more easily negotiate tough going, the Cushion Clutch that eliminates shock overloads to parts under power, the "Feather-Touch" Clutch Control for easier handling. Uniform Pressure Swing Clutches that take the jerks and grabs out of swinging, the Northwest Dual Independent Crowd that utilizes force most other independent crowd shovels waste—these are but a few of the advantages that Northwest Rock Shovels bring you. And remember, if you have a *real* Rock Shovel you never have to worry about output in *any* digging. With the advantages and proved performance of a Northwest it's no wonder Northwest owners come back!

NORTHWEST
ENGINEERING COMPANY
1514 Field Building
135 South LaSalle Street
Chicago 3, Illinois

S-80-49-3

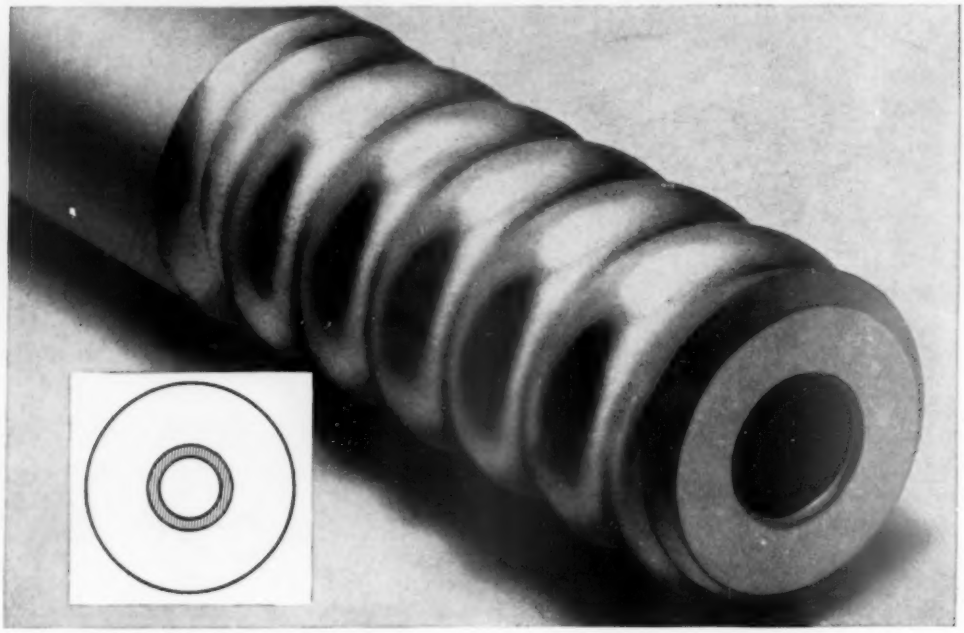
NORTHWEST

Always Ready to GO

NORTHWEST EQUIPMENT IS BUILT IN THE FOLLOWING SIZES

SHOVELS	CRANES	DRAGLINES	PULLSHOVELS	TRUCK CRANES
¾ Yd. to 2½ Yd. Capacity	13-Ton to 50-Ton Capacity	¾ Yd. to 3 Yd. Capacity	¾ Yd. to 2½ Yd. Capacity	25-Ton to 35-Ton Capacity

NEW ROPE THREAD MAKES UNCOUPLING EASY WITH SANDVIK COROMANT EXTENSION STEELS



Rope-Type Threads Afford No Starting Points for Fractures

Connections used in extension drill-steel must be easy to assemble and uncouple, and connections must not become weak links during the actual drilling. Sandvik Coromant's new patented rope thread makes it easy to join and uncouple the equipment . . . yet gives a solid and positive connection. The gently rounded form of this thread means trouble-free performance—eliminates common thread and coupling failures found in "saw-tooth" threads. The complete equipment—bit, rod, coupling sleeve and shank adapter—are all dependable Sandvik Coromant parts made of world-renowned Sandvik alloy steel. A futher advantage to the user is that the steel can be re-threaded. Atlas Copco has special literature on Sandvik Coromant extension steel and long-hole drilling, available to you with no obligation. We suggest you write today!

Atlas Copco

610 Industrial Ave.
Paramus, New Jersey

930 Brittan Ave.
San Carlos, Calif.

Distributors of COMPRESSORS, ROCK DRILLS, PNEUMATIC EQUIPMENT, SANDVIK COROMANT DRILL STEEL and CARBIDE BITS

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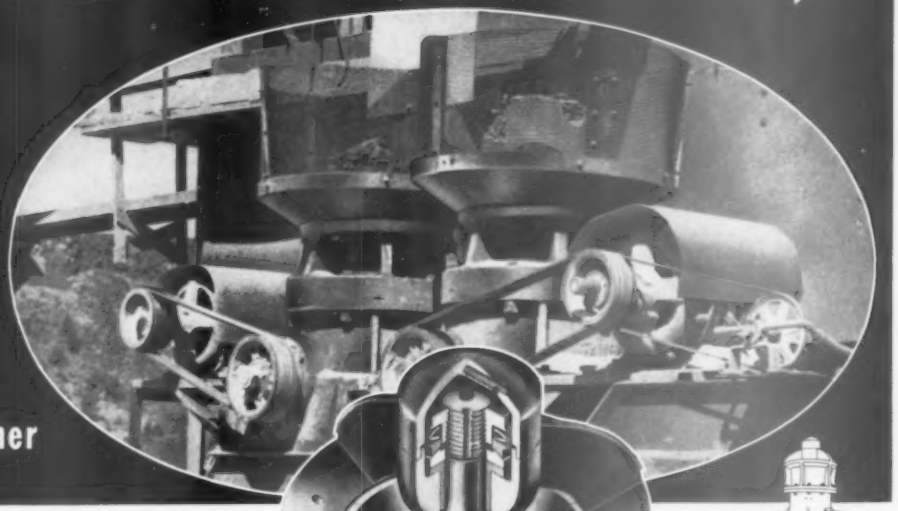
TRAYLOR-MADE

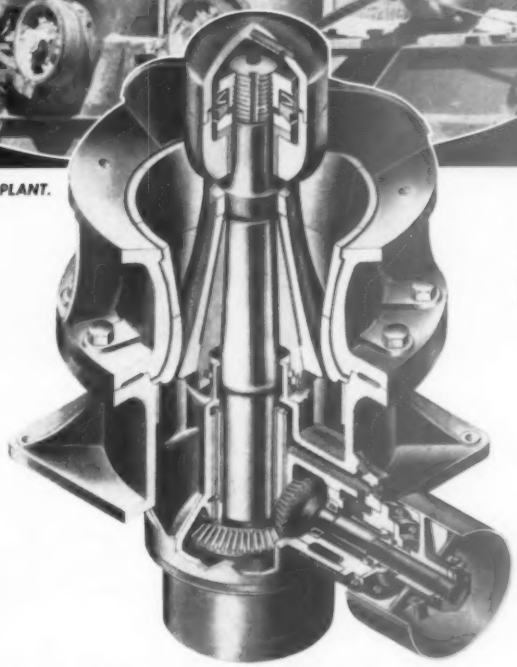
is engineered efficiency ✓



TY
Gyratory Crusher

2—1′-8″ TY CRUSHERS IN PORTABLE AGGREGATE CRUSHING PLANT.

Traylor engineering efficiency developed the self-tightening Bell Head and Curved Concaves used in the TY Crusher. This enables operators to secure large tonnages of small product, of uniform size, with low percentages of oversize and waste fines. Traylor TY Reduction crushers are built in six sizes from 1′-3″ to 5′-6″ and with feed openings from 3″ to 22″. Write for bulletin No. 8112 today.



TYPE TY CRUSHER (quarter-section cut-away view)

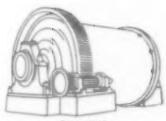
This view shows all the sound structural features that make it the outstanding secondary reduction crusher in its field.

SECONDARY GYRATORY CRUSHERS

APRON FEEDERS

PRIMARY GYRATORY CRUSHERS

JAW CRUSHERS



BALL MILLS

Traylor

TRAYLOR ENGINEERING & MFG. CO. 2004 **MILL ST., ALLENTOWN, PA.**

Sales Offices: New York — Chicago — San Francisco
Canadian Mfr.: Canadian Vickers, Ltd., Montreal, P. Q.

ROTARY KILNS

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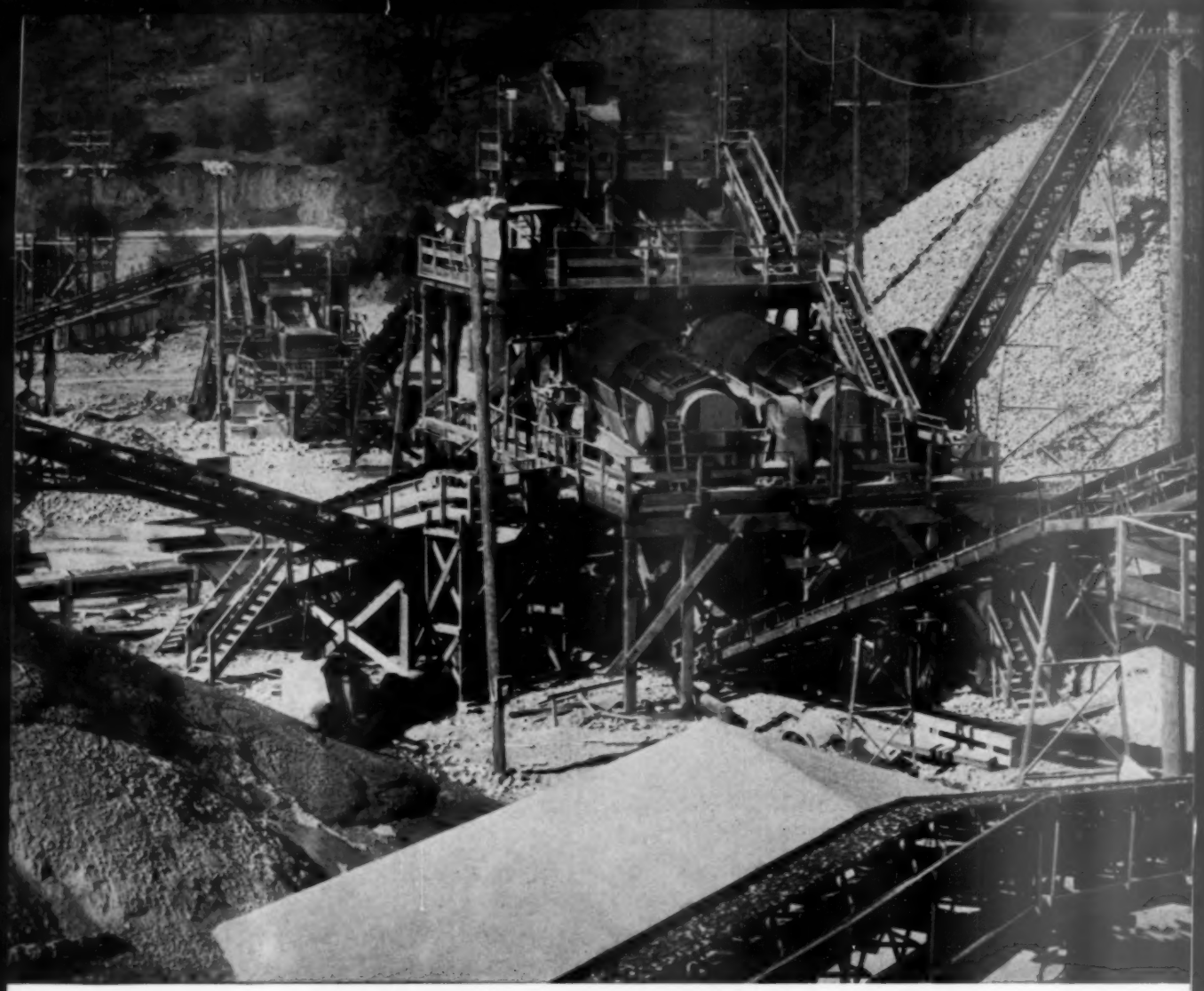


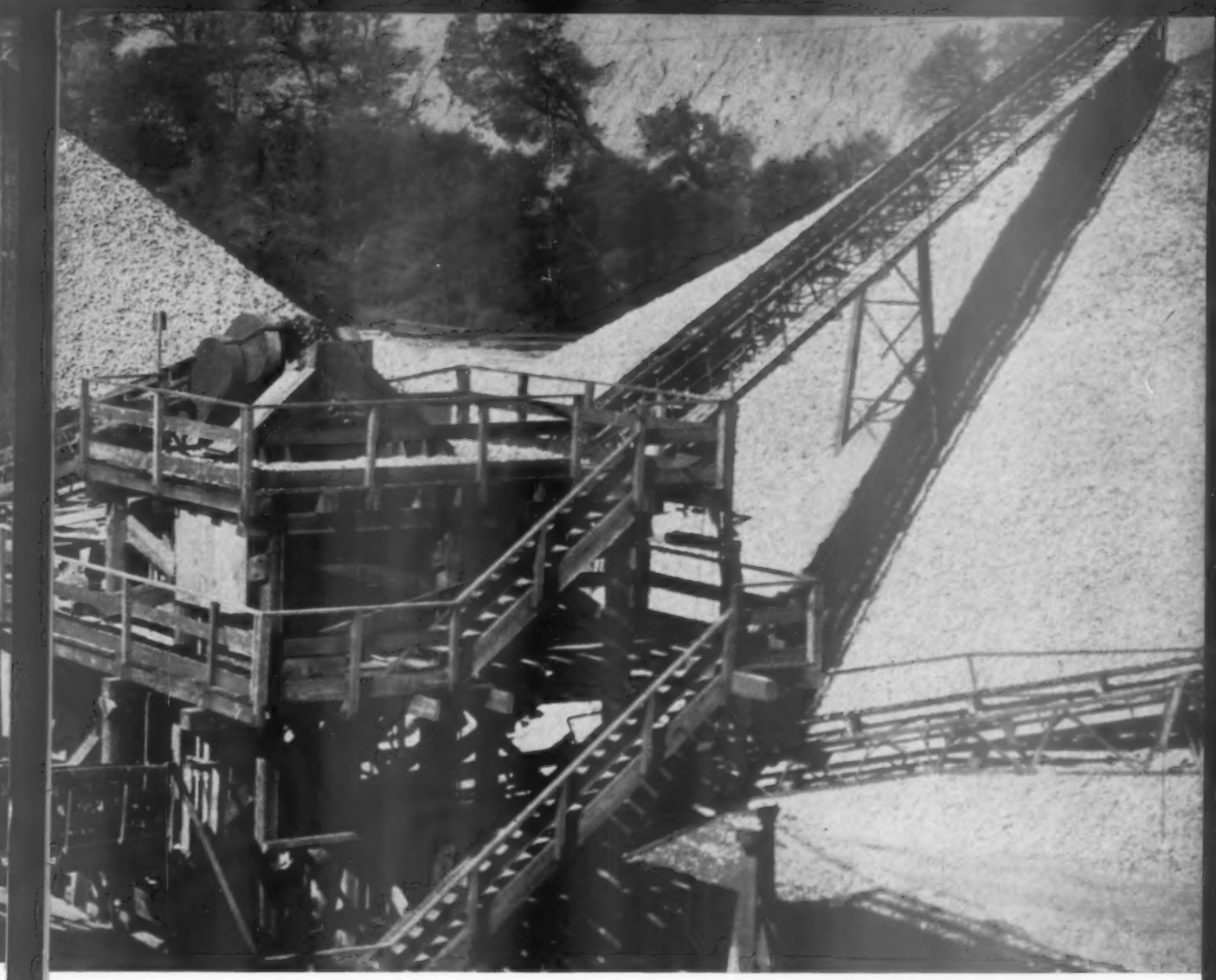
Six Texaco lubricants can solve all your major lubrication problems with the

Texaco Simplified Lubrication Plan

Fewer lubricants means fewer storage, handling and inventory problems, plus complete lubrication protection.

In a big operation like this aggregate plant, Texaco's Simplified Lubrication Plan contributes to overall efficiency by assuring that you get the *right* lubricants for all major equipment. The Texaco Simplified Lubrication Plan developed for your operation may call for as few as 6 lubricants, yet they will handle all major lubrication . . . reduce storage problems, handling costs, and minimize the chance of using the wrong lubricant for the job. And the Texaco Lubrication Engineer will make sure that the lubricants you use are tailored to your operation. It all adds up to equipment that's more efficient—and systematic lubrication that's simple, time-saving and economical.

Here are some of the products that can handle



all your major lubricating problems:

Texaco Ursa Oil Heavy Duty, fully detergent and dispersive, to keep heavy duty gasoline and diesel engines clean and economical.

Texaco Marfak, has a wide temperature range, high resistance to shock loads, seals out dust and dirt, prevents rust.

Texaco Regal Oil R&O for air compressors and hydraulic systems, a high-grade lubricant fortified with rust and oxidation inhibitors; assures trouble-free operation.

Texaco Universal Gear Lubricant EP, assures long life for transmissions and differentials.

Texaco Track Roll Lubricant, specifically designed to protect rollers against rust and wear.

Texaco Rock Drill Lubricant EP for longer drill life and full protection against rust, whether drills are running or idle.

Your local Texaco Lubrication Engineer can give you complete details on the Simplified Lubrication Plan. Just call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write:

The Texas Company, 135 East 42nd Street, New York 17, N. Y.

LUBRICATION IS A MAJOR FACTOR IN COST CONTROL

(PARTS, INVENTORY, PRODUCTION, DOWNTIME, MAINTENANCE)

What's Happening

IN OTHER FIELDS OF INTEREST TO THE ROCK PRODUCTS INDUSTRY

November, 1958

"An upsurge in corporate confidence" is the way The Wall Street Journal interprets industry's stepped-up capital spending on plant and equipment. This increase, expected to rise in the fourth quarter to a $31 billion annual rate, is aimed largely at modernization of equipment, cost-cutting and development of new products, rather than building additional capacity. In the second and third quarters this year, business slashed capital expenditures to an estimated annual rate of $30.3 billion, nearly 20 percent below the record rate of $37.7 billion in the third quarter of 1957.

Construction spending reached new highs in August. Expenditures for new construction work put in place reached $4.8 billion, a record total. It compared with $4.7 billion in August, 1957. The rise in private construction, mostly residential building, accounted for nearly half of the August gain. The pace of private home building edged upward to the best level since January, 1956; the Labor Department estimated the seasonally adjusted annual rate of private home starts at 1,170,000, a gain of 10,000 over July and well above the recession low of 915,000 in February. It also topped August, 1957, when the rate was 1,056,000. Preliminary figures for September, 1958, indicate that construction put in place matched August highs, pushing dollar volume for the first nine months to $36.4 billion.

Another business barometer, rail freight shipments, continues on an upward route. With all categories of freight showing improvement, carloading during the week ending September 13 climbed to 665,999. This was the largest total since early in November, 1957, although it was 10.1 percent below the figure for the same period last year.

"Controlled spalling"—creating interesting surface textures—results from a new stone finishing method developed by Linde Co. By sweeping an oxy-acetylene torch at 6,000 deg. F. across the surface of stone, minute chips flake off and dramatic highlights are produced. Linde expects its thermal texturing process to add quartzite to the list of readily usable stone and to cause a marked increase in the use of granite as an architectural facing material.

Colorado's oil shale can be converted to pipeline gas, say chemical engineers at Chicago's Institute of Gas Technology. After conducting a process feasibility study, they concluded: It is technically possible to produce a high heating value gas by hydrogasification of oil shale. Perhaps the most significant part of the IGT work, remarks **Chemical and Engineering News,** is that making fuel gas might be a more efficient way to use oil shale than to extract liquid fuels. This could be an important gas source if new natural gas reserves are not found fast enough.

Please turn to page 15

engine power
BY CATERPILLAR

Sand, gravel and rock companies:

Cut your equipment for both mechanical

Allen Ready Mix and Roverud Construction

PROBLEM:

Mechanical and electric power both are needed for a dredge

SOLUTION:

Put both ends of a single Cat Diesel to work

PROBLEM:

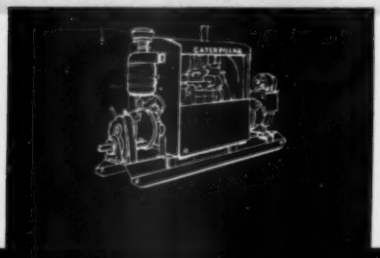
Excessive investment in engines

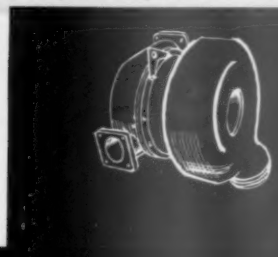
SOLUTION:

Use Cat two-handed Diesels

Nine basic Cat two-handed Engines range in size from the 650 HP (maximum output rating) D397 to the 75 HP D311 (Series H). These can be matched with generators to meet your exact job requirements.

Turbocharging is standard on most Cat Engines, giving more power per engine weight to make possible a much smaller engine package for a given horsepower requirement.





needs with <u>one</u> Cat Diesel and electric power

save money with Cat two-handed Diesels

Engine Division, Caterpillar Tractor Co.
Peoria, Illinois, U. S. A.

Bill and Sid Allen, owners of rapidly expanding Allen Ready Mix (left), faced the problem of replacing an old dredge that was giving erratic production of 90 t.p.h. A Caterpillar Dealer Engine Specialist was contacted. Knowing the Allen engine had to power a Thomas NHL pump, a 2" centrifugal priming pump and a 45 KW generator to handle the single drum hoist, and other electrical requirements, the CDES recommended a Cat D375 Turbocharged Engine, to furnish both mechanical and electric power.

This D375 (right), like all Cat Engines, has the bearing, block and crankshaft strength to take power off either end. The Allen Ready Mix D375 has shown after 1,100 hours that it's capable of handling the job of two "all-round" diesels of light-duty design. The V-belt drive transfers power from flywheel end; and a front-end shaft and V-belt drives the 2" priming pump and generator. Now this Memphis dredge produces 175 t.p.h.

One aggregate plant of Roverud Construction Co. was using four engines. Maintenance, portability, loss of production were problems. Partner Karl Hoegh (left) contacted his Caterpillar Dealer Engine Specialist. Solution: New Cat two-handed Diesels—a D397 at the Spring Grove, Minn., plant—a D375 at the Dakota, Minn., plant.

At left, the van-mounted D397 Turbocharged Engine direct-drives a Cedarapids 40" hammermill. And off the front of the engine a generator powers a 100 HP electric motor on the jaw crusher as well as motors on screens and conveyors. At right, the Turbocharged D375 is being set up for another combination drive application at the Roverud plant near Dakota, Minn.

Your Caterpillar Dealer Engine Specialist is your diesel power consultant. He's backed by quality parts reasonably priced, and a skilled staff of factory-trained servicemen. Call him now to avoid problems later.

Cat Generators have outstanding heavy motor starting ability, are simple and compact with no moving parts in the voltage control system. Output terminals are conveniently located for connection to panel or load. Generators are <u>matched</u> to engines.

Caterpillar's own foundry casts engine blocks of a special high-tensile-strength alloy, 50% stronger than ordinary gray iron castings. Further rigidity and strength are provided by numerous ribs and partitions.

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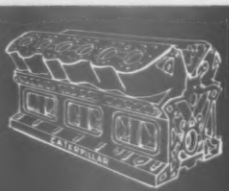

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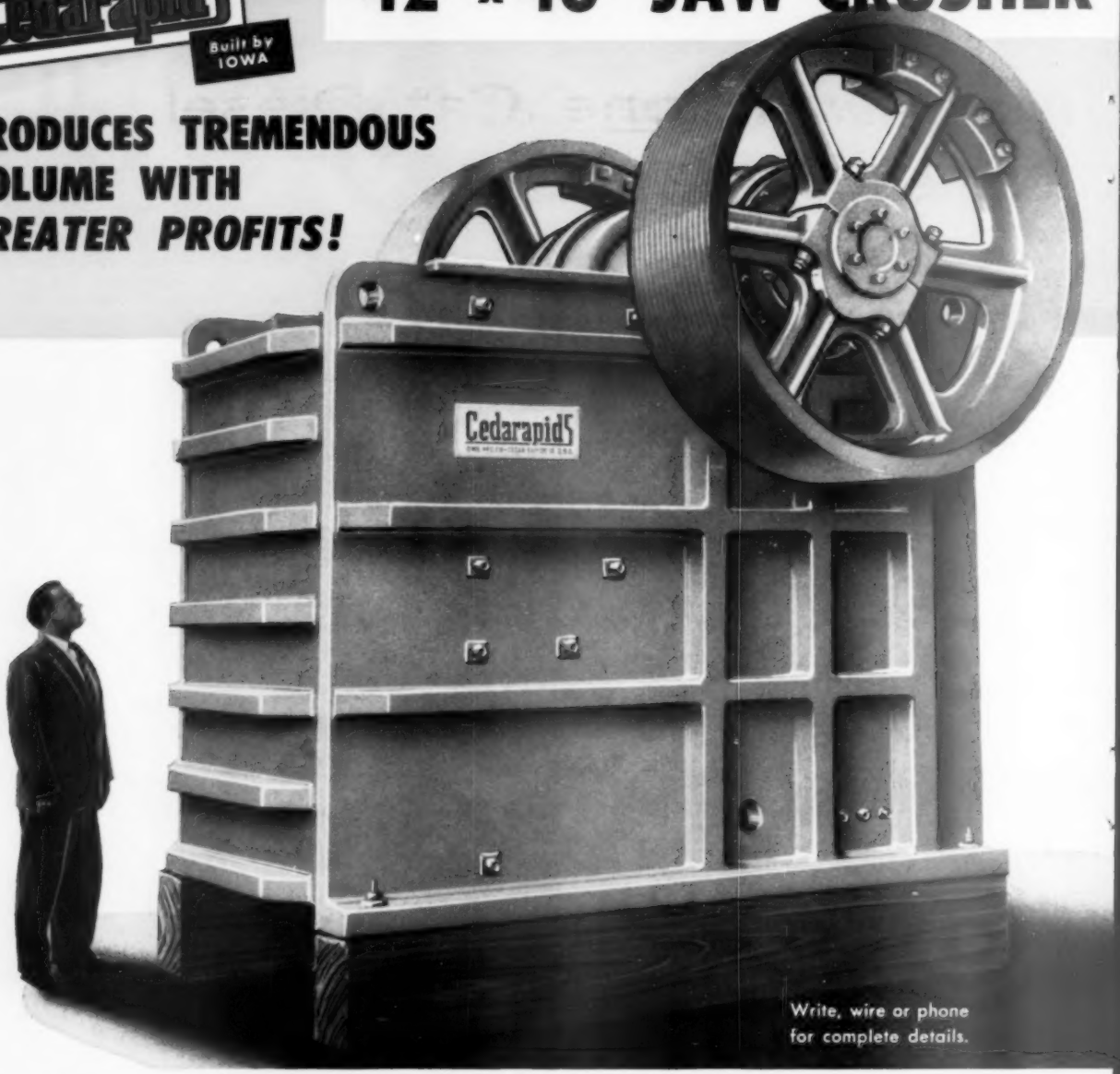
42" x 48" JAW CRUSHER

PRODUCES TREMENDOUS VOLUME WITH *GREATER PROFITS!*



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THE GREATEST COMBINATION OF HIGH-CAPACITY FEATURES EVER BUILT INTO A JAW CRUSHER!

PEAK PRODUCTION with overhead eccentric, balanced forced feed design. The proper eccentric throw, the angle of the toggle, and the RPM, are engineered to give the *exactly* correct amount of primary breaking in the upper portion of the crushing chamber, *force* the material downward to a second reduction stage in the lower portion, and permit *quick* discharge of crushed material for highest tonnage.

EXTRA POWER with heavier-than-average flywheels insures smooth, even operation under surge loads for high capacities.

TIME SAVING, easy, fast adjustment to produce various sizes. Hydraulic rams easily move the adjusting wedge, also permit fast replacement of the toggle plate when necessary.

STRONG, RIGID one-piece base assures maximum strength. Fully stress-relieved after assembly to eliminate any metal fatigue caused by stress in weldment. The solid, one-piece unit is rigid and free from flaws, fabricated with heavy rib-reinforcements to withstand the shock of punishing loads and prevent flexures that might otherwise cause undue wear on the bearings.

LARGEST ECCENTRIC SHAFT of any 42" x 48" Jaw Crusher. Extra-strong chrome-nickel steel, accurately machined and polished ground for perfect tolerance.

Other job-proved features include: One-piece pitman construction; spherical, self-aligning roller bearings protected by labyrinth seals; split hub flywheels for easy removal; hydraulically removable bearings.

758N

IOWA MANUFACTURING COMPANY

CEDAR RAPIDS, IOWA, U.S.A.

Prefabricated houses are coming out in colored aluminum. National Homes Corp.'s new Viking line of homes will go on the market January 1, with prices starting at $8,750. The announcement was made by James R. Price, president, who said the company had erected four aluminum houses in Lafayette, Ind., its headquarters. The aluminum is anodized to harden the surface and colored with baked enamel paint. About 3,000 lb. of aluminum is used in each home, including roofing shingles and siding. Kaiser Aluminum, Alcoa and Reynolds are supplying the metal, and all three will take part in a publicity effort to promote the houses. Mr. Price said the concern has a total capacity of 300 units per day.

Scrap merchants have entered the plastics field, and are providing stiff competition for makers of the new material. This is a field that many metal scrap men entered at the outset of the recession, drawing upon such items as old toothbrushes, shampoo squeeze bottles and picnic spoons. The reprocessed stuff can sell for 8 or 9 cents a pound cheaper than the 43 cents a pound asked for fresh polyethylene. The mushrooming market responsible for swallowing up current scrap inventories: hula hoops.

New designs in railroad cars—tailoring them to the commodity they carry— are coming out for increasing numbers of products. According to **The Wall Street Journal,** the rapid rise in handling of products in bulk contributes impetus toward special cars. For example, General American Transportation Corp. is busy turning out its Airslide covered hopper car that transports dry granular material. Production this year is expected to hit 1,500 units, up from 657 in 1957. The growth of the special car business is said to be a bright spot in the freight car building industry, which in July delivered only 2,113 new cars of all kinds, slipping from 7,725 a year earlier.

Milwaukee will have to pay $43,039 damages arising from failure to unload a boatload of clay, according to a court decision. Harbor facilities there are municipally owned. The incident occurred in 1955 when clay from England, bound for the Kohler Co. plant, was met by pickets at the dock and threats of a statewide strike prevented its unloading. The UAW has been on strike at Kohler Co. since April, 1954.

The roar of machinery that harasses workers may one day be reduced, not by shutting off the motor, but by giving the men electronic earphones to wear. These devices, still in the experimental stage, were developed by the Army and RCA to shut out noises that interfere with combat communications. Here is the way they work: A miniature microphone in the earpiece creates a second noise, just as loud as the original but opposite in phase. When the sound waves meet in the earcup, they cancel each other's energy, reducing the noise level.

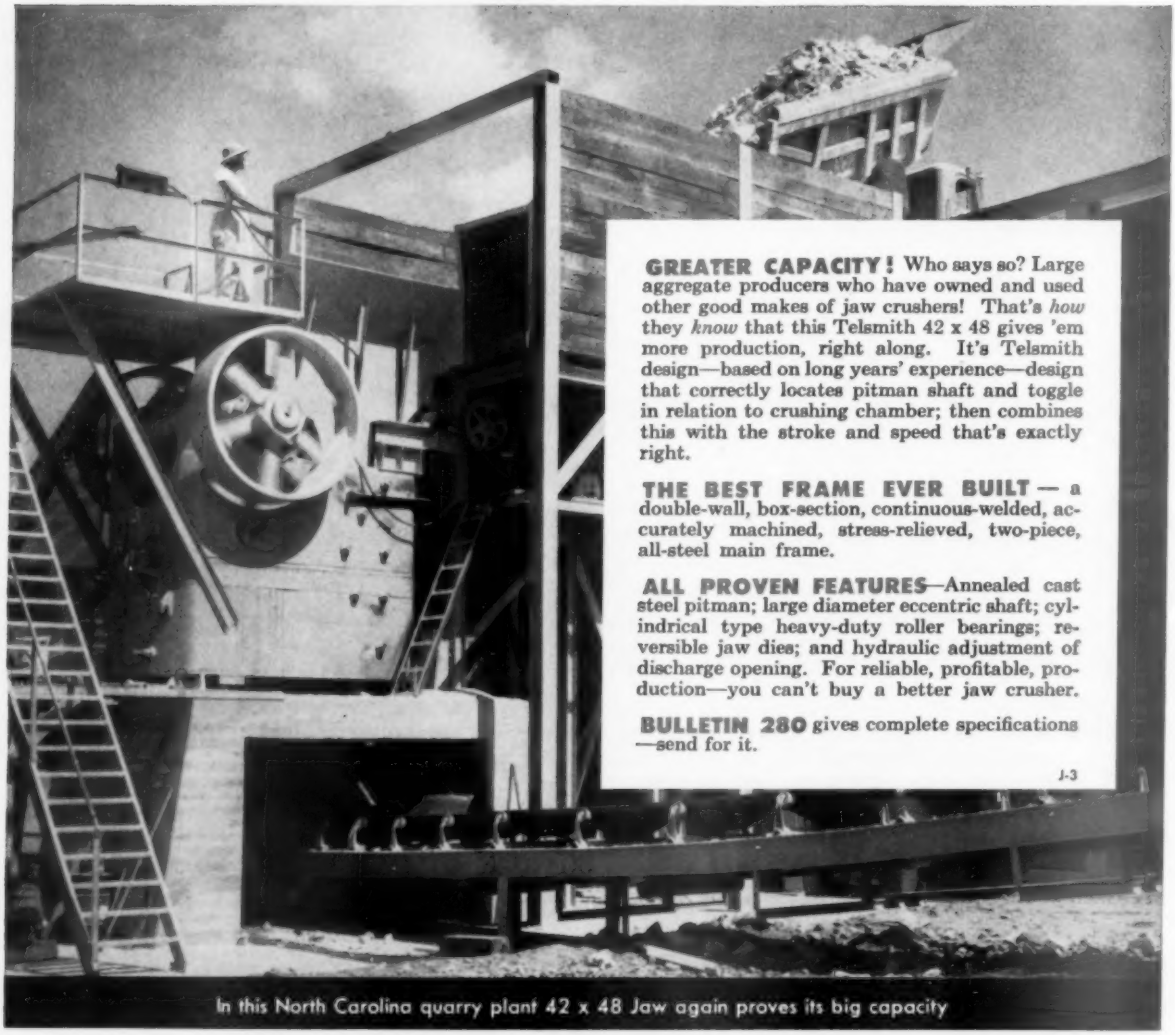
The Soviets are growing vegetables in asbestos and cement, feeding their artificial soils the necessary plant foods by machine. Reports from Leningrad are that the vegetables grow 50 percent faster and require 25 percent less manual labor under the new conditions. Soon, they predict, they will be growing fresh vegetables in desert and polar regions.

The editors

TELSMITH

42" x 48" JAW CRUSHER

with welded steel frame



GREATER CAPACITY! Who says so? Large aggregate producers who have owned and used other good makes of jaw crushers! That's *how* they *know* that this Telsmith 42 x 48 gives 'em more production, right along. It's Telsmith design—based on long years' experience—design that correctly locates pitman shaft and toggle in relation to crushing chamber; then combines this with the stroke and speed that's exactly right.

THE BEST FRAME EVER BUILT — a double-wall, box-section, continuous-welded, accurately machined, stress-relieved, two-piece, all-steel main frame.

ALL PROVEN FEATURES—Annealed cast steel pitman; large diameter eccentric shaft; cylindrical type heavy-duty roller bearings; reversible jaw dies; and hydraulic adjustment of discharge opening. For reliable, profitable, production—you can't buy a better jaw crusher.

BULLETIN 280 gives complete specifications —send for it.

J-3

In this North Carolina quarry plant 42 x 48 Jaw again proves its big capacity

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EDITOR'S PAGE

George C. Lindsay, Editor

Industry research needs your support

Benefits will assure business growth

RESEARCH WORK IN THE ROCK products industries, particularly basic research, isn't getting the attention it deserves.

Why? There are many reasons, but an apparent one is that management simply isn't sold on the economics of research benefits versus cost. Of course there are exceptions, and good ones!

Maybe you feel that your company is too small to handle your own research program. Maybe it is, for one research consultant states: "If a company can't spend at least $100,000 a year for five years, it can't afford its own research department."

But that's no excuse for dismissing research as unattainable, or for thinking that research is a function only of big business. It isn't.

If you can't do it yourself, you can hire it done. Or, maybe a better way for your company, you can more actively support along with other similar companies the research programs of your national industry association. They can do a better job with more funds.

The big thing you can't lose sight of is that research is essential for growth in any competitive field—and your company and the rock products field are not excluded.

How much can you afford to spend on research? That's a real good question! You'll have to consider the answer in light of the benefits that research will bring. You may find a new product, process or new piece of equipment that will make or save money for you. You may get an improvement in an existing product, or find new uses and markets for it. Research may show you the way to reduce costs of production and maintenance.

There's much evidence of research benefits—and some right in your own industry. One company has developed through research during the past few years no less than a dozen brand new commercially marketable products. Another small company spent from $200 to $3,500 a month on research. Result: financial rating was boosted from $50,000 to $300,000 in 10 years.

Don't be misled by the fact that research returns may be slow; some ideas may never pay off. But the truth is that research should be a continuing function of the very business process itself.

Rock products industries are growing fast. Your business will become more reliant upon progress as competition increases with industry growth. Since progress depends upon research, your business attitude toward it should be apparent.

Support research, and support it big!

ROCKY'S NOTES

NATHAN C. ROCKWOOD

Some of the usefulness of research

HAVING BEEN PRESENT at the birth in these industries of scientific research and watched its growth for about 50 years, we feel the urge to make a few comments, not all perhaps so complimentary as some readers would like. First, let it be understood what we mean by "scientific research," or "the art of scientific discovery" as the terms were used by the scientific discoverers of the 19th century. These famous scientists had come to believe that the infinite universe operates under a system of natural laws, or truths, which when finally resolved, so far as they can be by human beings with finite minds, will prove to be few and simple; that there are no phenomena in nature without definite natural cause, and that all causes are related to one infinite First Cause, which is a scientist's conception of the Creator or God.

They believed that the impressions, ideas, thoughts and reasoning of the human mind, like every other natural phenomenon responded and acted under certain natural laws, and that unless the individual possessing that mind obeyed those laws he could not be a discoverer of new scientific facts or truths. To quote from an authority who wrote a remarkable treatise on "The Art of Scientific Discovery,"* published 1874: "Knowledge of science enables us to understand more intelligently and therefore to appreciate more justly and truthfully, the mode of action of Almighty control, even in the minutiae of our actions, and therefore also makes our faith less blind and less erring." Thus, in the opinion of the great scientific discoverers of the 18th and 19th centuries, one could not be an honest productive researcher for nature's truths and an atheist at the same time. Incidentally, if that itself is truth, if the scientists of the world, including Russia, ever control diplomacy and national policy, there may be hope for survival of civilized people. We believe it is just as true of great scientists of the present as it was of those of the past. In more than one sense scientists control our future.

It follows from the foregoing that much that is now called research is not. A great deal is and has been merely experimentation and testing for one purpose or another, but not specifically to determine yet unknown scientific truths, or relate observed phenomena to known scientific truths, but merely to determine whether or not a particular material had the minimum quality necessary to serve some specific purpose. Such tests and investigations may eventually supply data and facts for scientific research, but are themselves not true research. Similarly, an ingenious person may see possibility of profit in utilizing some scientific discovery and engage in extensive investigation to adapt it to what he has in mind, but such work is invention rather than research—even that which is termed "applied research." Nearly all modern industry is built on the results of someone's basic research, possibly done a hundred or more years ago, but only recently utilized.

From our own observation, research in cement, concrete and concrete aggregates (and lime as well) was begun very largely for ordinary commercial reasons rather than to discover any new truths of Nature. The American Society for Testing Materials had its beginnings in the last decade of the 19th century. It was organized and promoted chiefly by purchasers and users of engineering materials for the purpose of establishing standards of minimum quality, so that they might use with some degree of confidence the same commodity made by different producers and manufacturers. At that time there was considerable secrecy about manufacturing processes. They knew

Please turn to page 142

**The author was G. Gore, LL.D. F.R.S., a research chemist of considerable reputation, and a deep student of "the general conditions and methods of research in physics and chemistry." It is now a very rare book and we have been told all available copies were purchased by the British Government at the outbreak of World War I to prevent the Germans deriving any benefit from it. The book is unknown apparently to most American scholars, for the late Dr. J. R. Whitrow, of Ohio State University, himself a noted research chemist, had never heard of it, when we once mentioned it to him. Dr. Whitrow subsequently was able to obtain a copy in England, and assured this writer of its value. Our own copy was obtained from England about 1910.*

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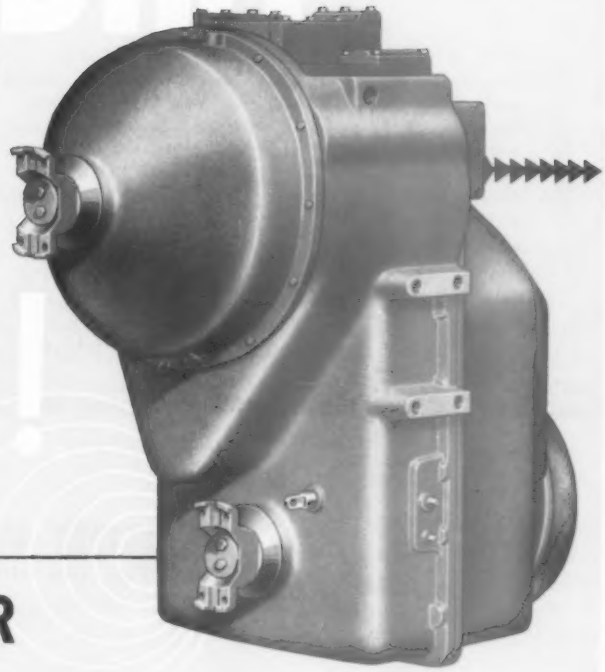

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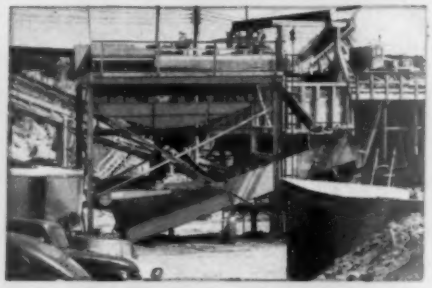

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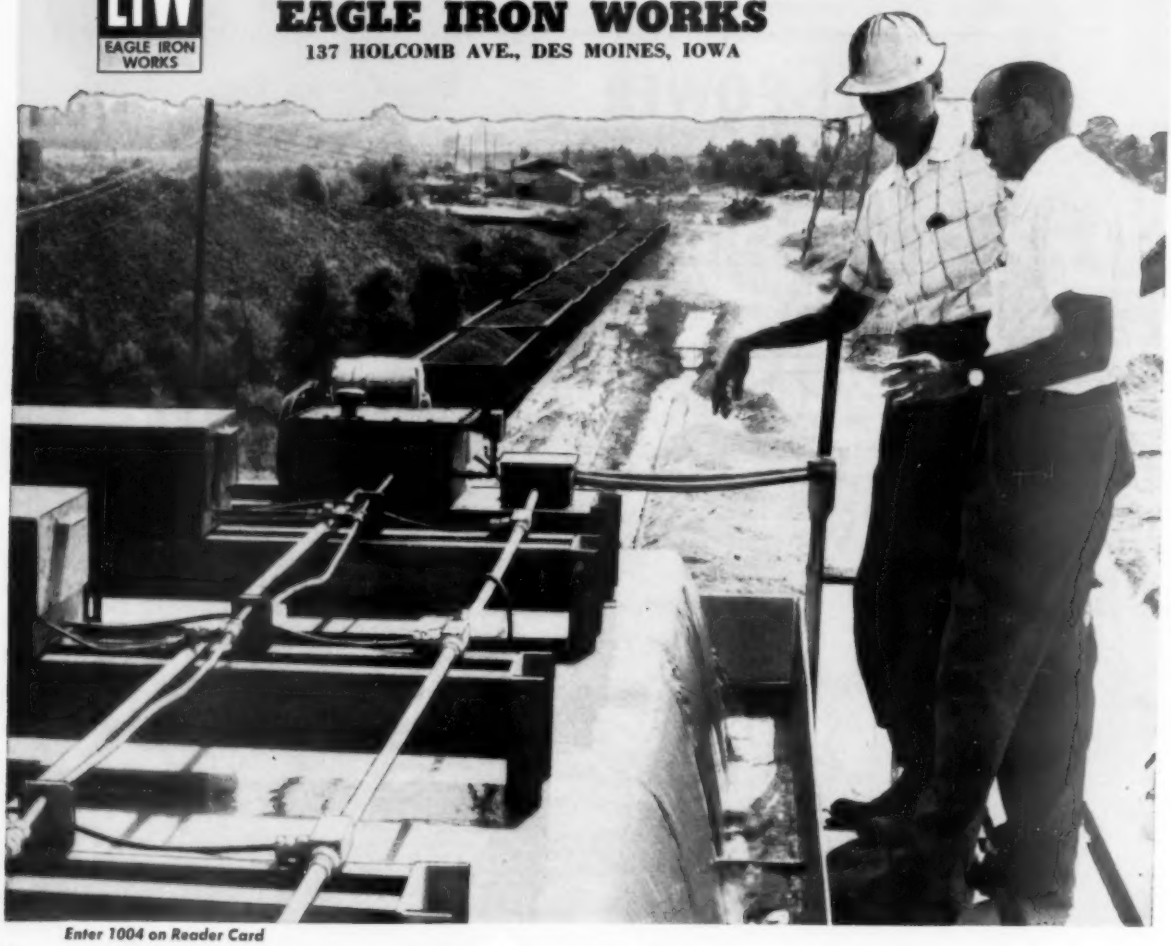

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Washington Letter

Edgar Poe

Labor Laws— Big issue

The biggest and most important domestic issue facing the new Democratic-controlled Congress will be labor legislation, always a controversial subject in the legislative halls of this country. The Eisenhower administration is now planning a concerted effort to get some reform legislation passed in 1959, a non-election year.

Misdeeds Probe Continues

Meanwhile, the McClellan Committee investigations into the labor-management misdeeds will continue at least through the first half of 1959, and perhaps longer. Senator John L. McClellan, Democrat of Arkansas, says the committee has sufficient leads and tips, supplied primarily by rank and file union members, to keep the committee busy another two or three years. However, the Senate appears unlikely to let the committee continue that long.

Indicative of the pressure that appears likely to build up was the slam-bang resignation of Senator Pat McNamara, Democrat from Michigan, who declared indignantly that the investigations had outlived their usefulness. Senator McNamara hails from a state where Walter Reuther and his United Auto Workers are very important. Other senators have issued public demands that the investigations be brought to an end.

Welfare, Pension Act passes

The only labor legislation to pass during the 1958 session was the so-called welfare-pension control bill, requiring limited public disclosure of employe welfare and pension funds. However, some persons who are sympathetic with labor say this act needs amending. The law requires administrators of welfare and pension funds covering more than 25 employes to publish descriptions of their benefits and to make annual reports on their financial operations to the Department of Labor.

In signing the law, President Eisenhower said the bill was weak for a series of reasons. He pointed out that the bill requires only a summary statement on financial operations, thus making it possible to conceal abuses. Furthermore, he says it fails to give the Secretary of Labor investigatory or enforcement powers.

Meany Calls for Clean-up

George Meany, president of the AFL-CIO, readily acknowledges that hoodlums have gotten control of some of the unions. He vows the AFL-CIO is doing what it can to help the unions to get rid of undesirable leaders. "We are prepared to go unto the next session of Congress to cooperate in writing legislation," said Mr. Meany, "but we will not accept the type of legislation that Senator Goldwater (Republican of Arizona) or Senator Mundt (Republican of South Dakota) would like to fashion in the way of punitive legislation that would be destructive of the trade union movement. That we won't accept, but we will accept legislation . . . that will aid us in keeping our unions clean."

Taft-Hartley Laws

Meanwhile, the Eisenhower administration will propose to the next session of Congress some amendments to the Taft-Hartley law, which has not had any major changes since the late Senator Robert A. Taft of Ohio steered it to passage in 1947.

Here are some of the administration proposals: Tighten the secondary boycott provisions of the Taft-Hartley law in an effort to protect all employers and individual employes from unfair coercion and eliminate the "hot cargo" situation; authorize the Secretary of Labor to investigate and challenge the truth or accuracy of pension and welfare fund operations, and authorize union members to sue dishonest labor officials in the

courts for their actions; forbid blackmail picketing to force workers to join or employers to accept a union which the workers do not want; authorize the Secretary of Labor to impose sanctions on a union which fails to file the reports required of it, or a union which has filed false reports; make embezzlement of general union funds, health, welfare and pension funds a federal crime; eliminate "no man's land" by authorizing the states to act where the National Labor Relations Board declines jurisdiction; create the office of Commissioner of Labor Reports within the Department of Labor, and require all unions to file full and detailed reports on their activities.

Jenkins-Keogh Bill

It appears fairly certain that the Jenkins-Keogh self-retirement plans bill, which passed the House but died in the Senate, will be reintroduced in the next Congress. Under this measure self-employed persons would be permitted to deduct for income tax purposes 10 percent of their earnings each year (not in excess of $2,500 annually) for 20 years. They would be allowed to deduct up to $50,000 during their lifetime, without paying income taxes on the deduction, into voluntary retirement plans. Special concessions would be made to persons 50 years of age or older when the bill would become law. The principle of the Jenkins-Keogh bill has been before Congress for 10 years. House passage was regarded as an achievement for the sponsors.

Record Public Works

The Army Engineers will supervise the spending of a record amount of money for public works projects under the bill approved in Congress just before adjournment this year. Under the law a total of $808,622,500 was appropriated for the Army Engineers. An additional sum of $225,577,335 was appropriated for the Bureau of Reclamation. The amount includes funds for the Tennessee Valley Authority and other public power authorities.

Military Works Program

As finally passed and signed into law, the huge military construction bill totals $1,353,850,000. This appropriation alone means that construction work for the military will be at a peacetime record. Of the total sum, $785 million is earmarked for the Air Force. A sizable amount of the funds will be spent overseas.

The proposed $500 million civilian airport construction bill, which President Eisenhower vetoed after Congress had approved the project in the final days of the session, will be reintroduced in the January session. The measure would have increased the presently authorized federal aid program from $63 million a year to $100 million and would have extended it for four additional years. Sponsors say they will press for its enactment next year.

Special Transport Agency

Emergency mobilization planning for land transportation in this country in the event of war has been placed by Congress under the jurisdiction of the Office of Civil Defense Mobilization. The Interstate Commerce Commission formerly was responsible for making plans to put carriers on a war footing in a national emergency. The ICC budget now does not provide for a continuation of this work. By terms of the new arrangement OCDM will do the direct planning, with the cooperation of ICC.

Limit Utility Payments

Reimbursements to utilities for relocation of their facilities would be prohibited under bills that are expected to be introduced at the beginning of the 86th Congress next year. However, proposals to limit reimbursements to utilities meeting specified requirements would appear likely to receive greater favor with the lawmakers.

An example is a plan that would allow payments only to utilities which have a "property right" on the right-of-way of a new highway. Senator Langer, Republican of North Dakota, introduced a similar proposal in the closing days of the 85th Congress, but no action was taken on it.

Higher Gasoline Import?

There is a probability that the Eisenhower administration may recommend a higher federal tax on gasoline in the next session of Congress. Congress in 1958 abandoned the Byrd pay-as-you-go highway construction program in an effort to speed up the road building program.

Now it appears that the Highway Trust Fund on the basis of present tax yields will not have sufficient funds to keep up the present construction pace, unless Congress increases the federal taxes on gasoline and oil. Budget Director Maurice Stans says if more revenues do not come from some source, the fund will show a deficit of $1 billion by mid-1960, and a $2-billion deficit by mid-1961.

END

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How would you decide?

A round-up of actual day-to-day in-plant problems and how they were handled by management men

When can't you fire an employe for stealing?

What Happened: Four employes were suspected of stealing small tools. The company reported it to the Deputy Sheriff and asked him to interrogate the workers involved. While questioning them, the Sheriff promised the suspects that if they would return the tools, and confess, the company would not impose any serious penalty. The workers brought the tools back—and were promptly fired by the management. The workers took their plea to arbitration, stating:

1. We were promised leniency, and instead, we got the axe.
2. The stuff we stole were small items, and we didn't resell them to make money.
3. The company has previously been "forgiving" to others who have taken off with tools for their personal use. Now it decides to make an example of us.
4. Don't brand us "thief" for such a small violation.

The company stood its ground on the basis that regardless of the size of the loot removed from the premises, stealing is a dischargeable offense.

Was the company:
Right? ☐ Wrong? ☐

What Arbitrator Bothwell ruled: "It is perfectly clear that discharge may be justified as a penalty for stealing. Discharge has been sustained as a penalty for theft in many arbitration cases. The company has stated its policy to be to discharge an employe in a clear case of theft, even in the case of a first offense. The arbitrator must reject the contention of the union that the taking of small items from the company, for personal use of the employe, constituted a defense. Except for the promise of immunity from prosecution, which apparently secured the confessions, the arbitrator can find no serious objections to the action of the company, and would sustain the discharges. However because of this promise, and the fact that none of the employes had any previous discipline on his record, the arbitrator finds that the discharges were not for proper cause. The employes will be reinstated, but without back pay."

Each incident given in this department is taken from a true-life grievance which went to arbitration. Names of some principals involved have been changed for obvious reasons. Readers who want the source of any of these cases may write to *Rock Products*.

To stay competitive, does a company have the right to eliminate certain jobs?

What Happened: In the interest of better production, the company decided to cut out a group of jobs, and assign some of these duties to other employes. The union protested: "These jobs cannot be eliminated without negotiation—the contract doesn't give the company any such right—the agreement said nothing about job elimination and therefore the company cannot take this function on to itself."

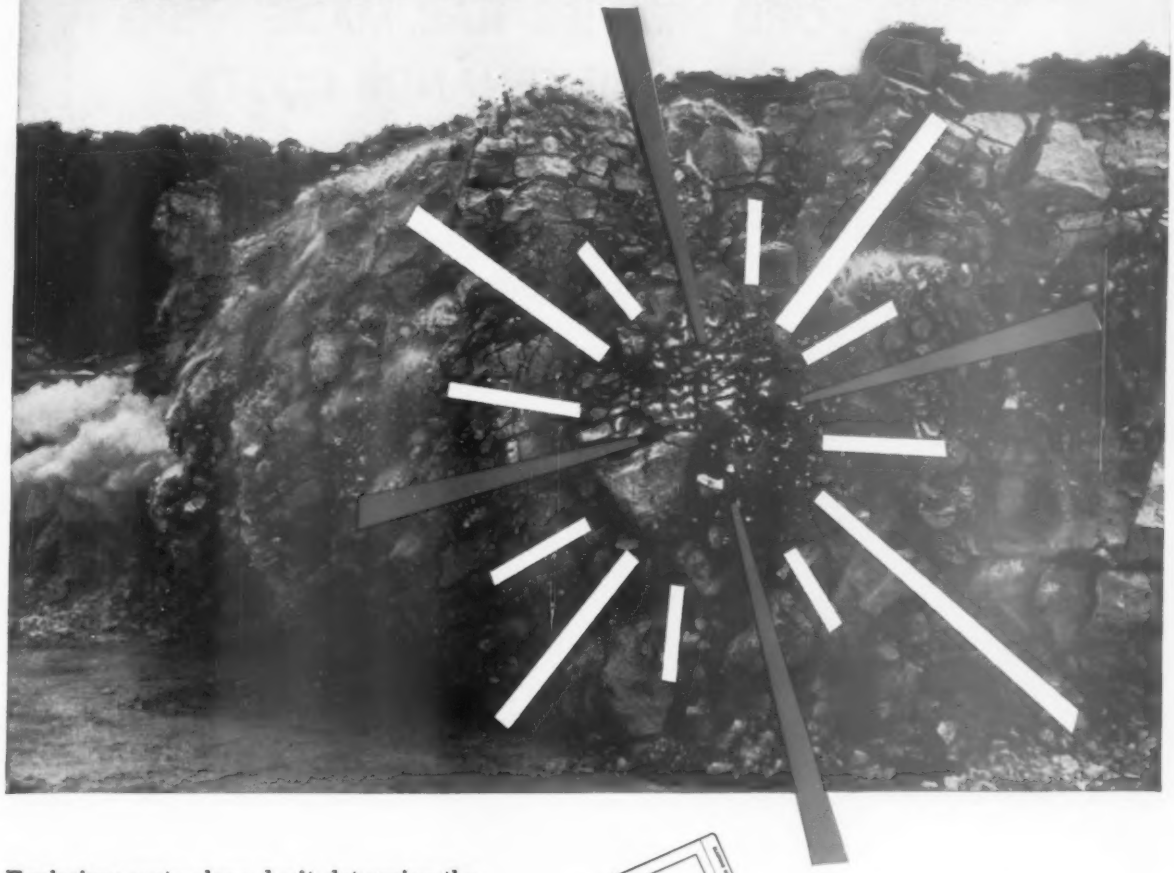
Management stood its ground and maintained that a company cannot be stagnant and remain in business. If certain jobs become unnecessary to good production, out they go.

Was the company:
Right? ☐ Wrong? ☐

What Arbitrator Warns, Jr., ruled: "It is well established in industrial relations, and confirmed in numerous published arbitration cases, that in the absence of a restriction in the collective agreement, management has the inherent right to eliminate jobs, classifications, and to combine duties in the interest of production. The only restriction is that the admitted right NOT be exercised in an arbitrary or discriminatory manner. Management has an inherent right to make all essential decisions designed to make the company competitive. The elimination of jobs and the combination of job duties is included in that right."

(Continued on page 29)

HOW MUCH DID THIS BLAST COST?



Explosives costs alone don't determine the value of a given blast. The explosives you use have a direct effect on the whole operation: drilling, digging, hauling and crushing.

You can find out, quickly and easily, the true, complete cost on any blast by using the new, simplified computing method developed by Atlas. It's called the Blasting Cost Chart, and it's yours without cost or obligation.

Use this new method to learn your real blasting costs. It will help you plug profit leaks and come out money ahead in your blasting. Your nearest Atlas representative will show you how the chart works, and you can keep the actual figures within your own organization.

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"Our Fords have given us less trouble than any other make of truck we've owned! Also, our Ford Dealer has always given us immediate and very good service. We've never had any downtime waiting for parts. They're always available at our Ford Dealer's, so we don't have the problem or expense of carrying a big parts inventory.

"Our drivers sure like the 'hillability' of the big Ford Tilts with their Super Duty V-8 engines! They say the 'Big V' has sure got it for power that seems to level out the steepest hills. And the Tilt Cabs are tops for maneuverability and riding ease.

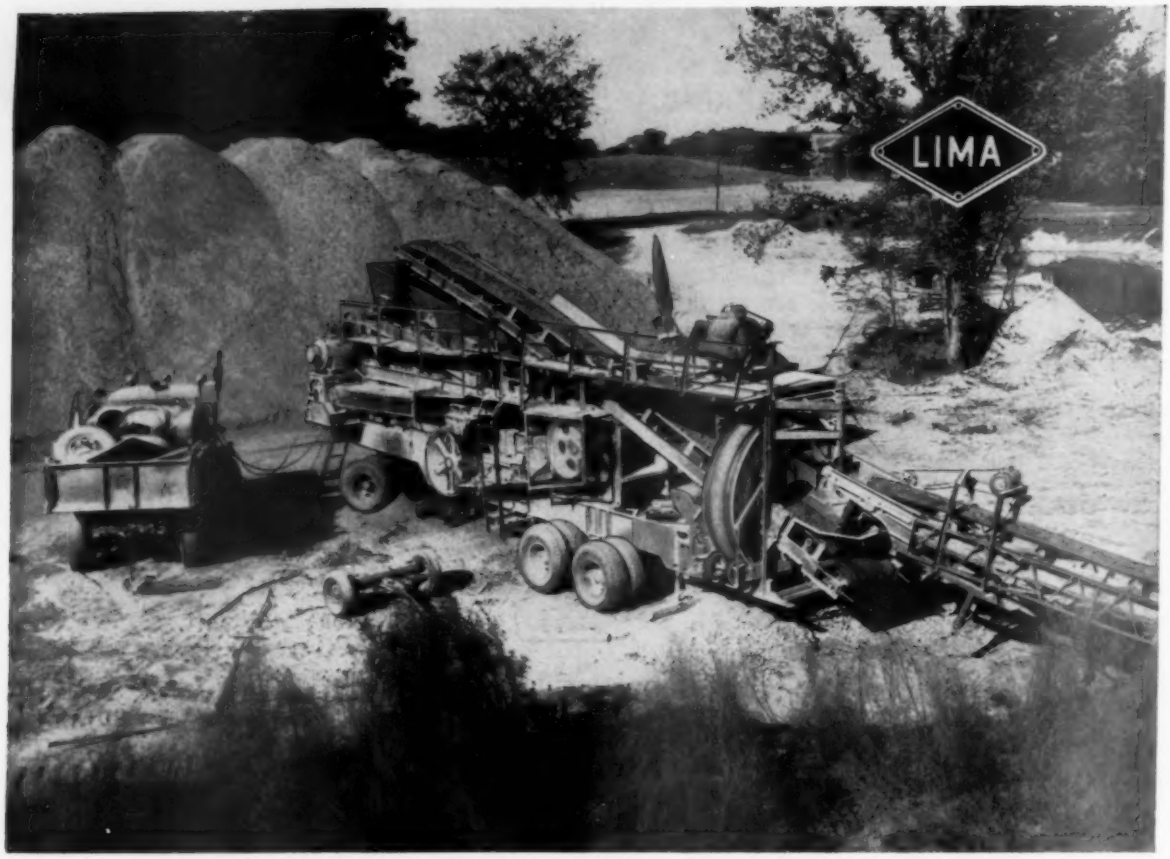
"Performance plus economy . . . that's why we're sold on Ford trucks. We started using Fords when we opened our trucking department in 1954, and today 28 of our 35 trucks are Fords."

New Styleside pickups! Notice the handsome new grille, dual headlights, stronger wrap-around bumper. 6½-, 8- and 9-ft. boxes available in Styleside or Flareside models. Short Stroke Six or V-8 engines.

FORD TRUCKS COST LESS

LESS TO OWN . . . LESS TO RUN . . . LAST LONGER, TOO!

Enter 1054 on Reader Card



Lima Austin-Western 111 Crushing and Screening Plant, owned by Ronald Weaver, Dansville, Mich. High-grade specification material is being produced at an average rate of 1000 cu. yd. per 9 hr. shift.

"Lima Austin-Western will outlast and outproduce"

Says Ronald Weaver

Ronald Weaver, Dansville, Mich., has owned and operated a Lima Austin-Western 111 Crushing and Screening Plant since January, 1953. With his 4-man crew, he works all year 'round, producing specification material meeting county and State requirements.

Mr. Weaver says: "I have owned and operated other plants, and I am convinced that over a period of time a Lima Austin-Western will outlast and outproduce other comparable machines. I depend on this plant to show a reasonable profit, and it has produced all that can be expected.

"It is truly a portable machine. Not long ago I moved the 111, power plant, feeder, two dump trucks, dragline, bulldozer and other miscellaneous equipment 20 miles. The time involved in dismantling the equipment, loading, setting up, and resuming operation was only 3 hours.

"The quality of the equipment is shown by the fact that it has never required a major overhaul since it went into operation 5 years ago. But the most obvious reason for buying and using Lima-Austin-Western is the fine relationship and cooperation between not only the dealer and the operator, but more important, the manufacturer, the dealer and the operator."

Get the high-tonnage, low-cost Lima Austin-Western story from your nearby distributor . . . or write direct.

DISTRIBUTORS IN PRINCIPAL CITIES OF THE WORLD

LIMA AUSTIN-WESTERN Crushing, Screening and Washing Equipment

BALDWIN · LIMA · HAMILTON

CONSTRUCTION EQUIPMENT DIVISION • LIMA, OHIO

5829

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LABOR RELATIONS

continued from page 24

Can you discharge an employe for refusal to apologize for rudeness?

What Happened: Jerry Daley missed work on payday. The following morning he went to the personnel office to pick up his check. He waited by the payroll clerk's desk while she engaged in what seemed to him an endless and pointless telephone conversation. After

about 10 min. he reached over her desk and pressed down the contact button on the phone, which put an end to the conversation. The clerk was infuriated and immediately went in and reported him to the superintendent. The superintendent came out and asked Daley to apologize for his rudeness. When he refused, he was told that he was suspended from work, and that he could come back when he was ready to say he was sorry about his part in the incident. Daley said the most he would do would be to exchange apologies. Some 10 days later, when the company had not heard further from him, he received notice that his services were terminated. Daley came in and filed a grievance on his discharge.

Was the superintendent:
Right? ☐ **Wrong?** ☐

What Arbitrator A. R. Marshall ruled: "Fights, heated discussions and other violent disturbances obviously are not conducive to plant efficiency. But some personal friction is bound to arise out of the normal tensions of the work environment. The code of behavior established by arbitrator's rulings recognizes these considerations. Thus, fighting on the job normally warrants discharge—but no right of discipline is recognized for the usual disagreements and personality conflicts of everyday intercourse. This case involves a borderline situation which warranted a penalty of less than discharge. Although the employe deserved some punishment for his unpardonable rudeness, the company was also wrong in trying to exact an apology from him as a condition of further employment. He shouldn't have been required to say he was wrong when he continued to think he was right. This isn't the type of demand a company is entitled to make of its employes. The ten days that he was off the payroll shall count as a suspension for the offense committed." The employe was reinstated.

Can you fire a steward because of a threat?

What Happened: The foreman and the shop steward were going at it hot and heavy. Tempers flared and words flew without control. The shop steward was objecting strenuously to the foreman's decision to fire Bill Smith. "If you fire that man," the steward shouted, "the rest of the men in that department won't work today."

The foreman took this to be a violation of the "no-strike clause" in the contract, and told the steward that he was fired.

Both the parties involved waived the first three steps in the grievance procedure and took the case to arbitration.

The company claimed:

1. The steward had no authority to pull the men off the job.
2. He was disobedient and disrespectful to supervision by using such threatening language.
3. A threat to strike is no different from an actual unauthorized walkout.

The shop steward retorted that: actions speak louder than words—no matter what was said, no one was pulled off the job.

Was the company:
Right? ☐ **Wrong?** ☐

What Arbitrator Hughes ruled: "For the steward to be guilty of a threat, as charged by the company, it would have been necessary for him as shop steward to direct the employes to walk off the job; or to approach them in such a manner as to incite them to leave their work. There is no evidence that he actually talked to any employes, before he was discharged, about organizing a strike. The Arbitrator sustains the union's contention that the shop steward was discharged without sufficient cause and holds that he should be reinstated."

Can an employe be fired for badgering a foreman at his home?

What Happened: Taussig left his job early and went to the locker room to wash up about 10 min. before the quitting bell rang. He was seen by a foreman from another section who reported his presence in the locker room to Taussig's own foreman. Nothing was done about the matter at the time. The following evening, Taussig went to the home of the foreman who made the report. According to Taussig, he wanted "to talk" to the foreman to try to get him to retract his report.

There later was considerable disagreement about what happened next. In any event, it wound up in an argument in which loud language and threats were exchanged. The company heard about the incident the next day, and after questioning Taussig about his visit, they fired him because of what had happened at the home of the foreman. Taussig felt that the discharge was unjustified and took the case to arbitration.

Was the company:
Right? ☐ **Wrong?** ☐

What Arbitrator Erbs ruled: "Even if the employe's only purpose in going to the foreman's house was to 'talk to him,' he should have realized that such a meeting could not result in any other fashion than what followed. If the employe felt that he had a legitimate grievance, the matter should have been handled through the normal grievance machinery provided. By-passing the grievance procedure, if approved, could result in jeopardizing the entire industrial-relations system in the plant. Supervisors should never be subjected to visits from employes at their homes in connection with disciplinary cases. The discharge was justified."

END

MAGNETORQUE® SWINGS!

The 3½ yard P&H 1055 handling aggregates at Standard Materials Corporation's Indianapolis White River plant.

one of the important extras you get with the 1055 LC P&H dragline

Swing movement of the bucket is the all important motion—the key to high production on any dragline. That's why we say Magnetorque® Swings are an important extra you get on the P&H 1055. Only P&H has Magnetorque, the electromagnetic type coupling that eliminates friction linings on the swing clutch—no adjustments, no wear, no linings to replace; a swing speed of 4.0 r.p.m.—unmatched for a machine of this capacity.

Check These Benefits of P&H Design Features

- **Quicker response—easier operation with Magnetorque on swing and propel motions**
- **Greater maneuverability and less maintenance with P&H single roller crawlers driving on renewable pins**
- **Smooth, lively swings with P&H live roller circle—adjustable hook rollers for better resistance to tipping**
- **Maximum stability on every motion with P&H balanced weight distribution**
- **Positive holding action with bigger P&H brakes**

To increase production and reduce costly downtime and maintenance it will pay to compare the P&H 1055 feature for feature before you buy. For the complete story write Dept. 558B, Harnischfeger Corporation, Milwaukee 46, Wisconsin.

HARNISCHFEGER

Construction & Mining Division
Milwaukee 46, Wisconsin

THE P&H LINE: Crawler cranes 20 through 100-ton capacity. Truck cranes 10 through 70-ton capacity. Crawler excavators ⅛ through 3½ cu. yds.

Enter 1010 on Reader Card

PEOPLE IN THE NEWS

M. J. Grove appoints chemist

JACK MOFFETT has been appointed chemist for the M. J. Grove Lime Co., Lime Kiln, Md. He was formerly research chemist for the Standard Lime and Cement Division of American-Marietta Co. A graduate of West Virginia Wesleyan College, Buckhannon, W. Va., where he received a B.S. degree in chemistry, Mr. Moffett will be located at the Frederick, Md., plant where the new laboratory facilities are being installed under his direction.

U. S. Gypsum field manager

THOMAS M. GRADY has been named field manager—quality at the Boston, Mass., plant of United States Gypsum Co., Chicago, Ill. A graduate of St. Peter's College, Jersey City, N.J., Mr. Grady joined the company in 1948. He was quality superintendent in Boston for three years and for the last three years has served in a similar capacity at the Stony Point, N.Y., plant.

Assistant vice president

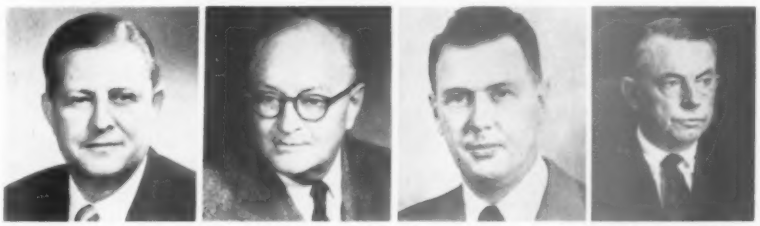
JAMES D. MORAN has been appointed assistant vice president of The Flintkote Co., East Rutherford, N.J. In his new capacity, Mr. Moran will serve as line assistant to Wilson Harvey, vice president and general manager of the Pioneer division, Los Angeles, Calif. In addition, he will continue in charge of legal duties as well as supervise public relations, industrial relations and advertising department of the division.

Mr. Moran joined Flintkote in New York in 1950 as assistant to the vice president and secretary. In 1954 he was transferred to the Pioneer division as assistant to the vice president and general manager and in 1956 was named director of public and industrial relations. A native of New York, Mr. Moran is a graduate of Notre Dame University and Columbia University Law Schools.

IMCC managers

C. LESTER RICHARDS, manager of the Columbia, Tenn., phosphate division of International Minerals and Chemical Corp., Chicago, Ill., since 1953, has been named assistant manager of the Bonnie phosphate plant at Bartow, Fla. Hardin F. Hill succeeds Mr. Richards as assistant manager of the Tennessee phosphate division.

Executive changes announced by Ruberoid Co.



O'Leary — Woodward — Sweeney — MacDonald

E. J. O'LEARY, executive vice president of The Ruberoid Co., New York, N.Y., has been elected president and chief executive officer of the company. He succeeds Stanley Woodward who becomes vice chairman of the board. Herbert Abraham is chairman of the board. Frederick K. Sweeney, general sales manager, has been named vice president in charge of sales, and Kenneth R. MacDonald, director of purchases, has been made vice president in charge of purchases.

Mr. O'Leary, widely known in the building materials industry, joined Ruberoid in 1950 as general sales manager. He was elected a vice president in 1951, director in 1952, a member of the executive committee in 1953, and executive vice president in 1955. A native of Philadelphia, Mr. O'Leary is a director of the Gypsum Association, chairman of the board and a member of the executive committee of the Asphalt Roofing Industry Bureau, a past president, director and on the executive committee of the Asbestos-Cement Products Association.

Mr. Woodward, who has been president of Ruberoid since 1954, was associated with the Continental Roofing & Manufacturing Co. when it was acquired by Ruberoid in 1928 and was made a vice president.

Mr. Sweeney joined Ruberoid as a sales representative in Minneapolis in 1938. He was made assistant to the western division sales manager in 1946 and in 1950 became district sales manager in Mobile, Ala. He was promoted to general sales manager in 1957.

(Continued on page 32)

C. Glenn Browning retires

C. GLENN BROWNING has retired as executive vice president of sales, Lehigh Portland Cement Co., Allentown, Pa., after 37 years of service, but will continue to serve as a director of the company. Ralph L. Browning, who has been vice president of sales for the past six years, succeeds C. Glenn Browning as head of the sales division.

Glenn Browning joined Lehigh in 1921 as a clerk in the Allentown sales department. After serving in the field with the sales force in several states, he was made district sales manager of the Richmond office in 1934 and became division manager for the Baltimore-Richmond territories in 1936. He was appointed assistant eastern sales manager in 1938, eastern sales manager in 1946, and vice president and general sales manager in 1947. He has been executive vice president of sales since 1956.

PEOPLE IN THE NEWS

(Continued from preceding page)

Mr. MacDonald has been director of purchases since 1941. He joined Ruberoid in 1935 as insurance manager. A native of Nova Scotia, Canada, he was graduated from the Bentley School of Accounting and Finance, and attended Boston University and Suffolk Law School at Boston, Mass.

Marquette operations engineer

HOWARD HANKS, JR., has been appointed operations engineer for Marquette Cement Manufacturing Co., Chicago, Ill. He was formerly consulting service engineer for E. I. du Pont de Nemours & Co. Prior to that he served as engineer and assistant plant superintendent for Lone Star Cement Corp. Mr. Hanks is a civil engineering graduate of Notre Dame University, Souh Bend, Ind.

U. S. Gypsum manager

MONTE C. CARPENTER, western merchandise manager of the United States Gypsum Co. in Los Angeles, Calif., has been appointed dealer merchandise manager of gypsum products in Chicago.

On Kaiser Gypsum sales staff

WILFRED M. TORGERSON has been appointed line salesman for the northern division of Kaiser Gypsum Co., Oakland, Calif., with headquarters in Portland, Ore. A native of Minnesota, Mr. Torgerson, an 18-year veteran of gypsum product sales, previously served with Western Gypsum Products, Ltd., Winnipeg, Canada.

William Plummer, who has been with Kaiser for six years, has been named sales representative in Contra Costa County and adjacent northern areas, including parts of Solano, Sonoma and Napa counties. Born in Alameda, Calif., Mr. Plummer is a graduate of San Jose State College, in industrial technology.

Universal Atlas sales representative retires

W. PLATT GREER has retired as sales representative in the Lima, Ohio, area of Universal Atlas Cement Co., New York, N.Y., after 49 years of service. He will be succeeded by Thomas Wallick. Mr. Greer joined the Pittsburgh office of Universal Atlas in 1909, transferring to New York in 1919 and then to West Virginia. He has been representing the company in the northwest Ohio territory since 1921.

Mr. Greer is also secretary-treasurer of the Wapak Sand and Gravel Co., which he and his associates organized in 1929, and the Central Concrete and Supply, Inc., both of Lima, Ohio.

Ash Grove appoints controller

B. R. RAINES has been appointed controller for Ash Grove Lime & Portland Cement Co., Kansas City, Mo. For the last seven years he has been senior accountant for Arthur Andersen & Co. A graduate of the University of Missouri, Columbia, Mo., Mr. Raines received his master's degree in accounting from the University of Illinois, Urbana, Ill.

PCA engineer

GEORGE E. BATTEY, JR., has joined the Los Angeles office of the Portland Cement Association as office engineer. He was formerly field engineer in the metropolitan Los Angeles area and prior to that served as an engineer for the California Division of Highways. A native of Nebraska, Mr. Battey is a graduate of the University of California, Berkeley, with a B.S. degree in civil engineering. He is a member of the American Concrete Institute, Los Angeles City-County Engineers Association and American Society of Civil Engineers.

NCSA engineer resigns

JAMES M. RICE has resigned as research and testing engineer for the National Crushed Stone Association, Washington, D.C., to become director of the Natural Rubber Bureau's laboratory. A registered professional engineer, Mr. Rice received his master's degree in highway engineering from Purdue University, Lafayette, Ind., where he also was on the faculty as an instructor.

Thomas Brown named GWA sales manager

THOMAS C. BROWN has been appointed manager of Great Western Aggregates, Inc., a wholly owned subsidiary of Ideal Cement Co., Denver, Colo., according to an announcement by Cris Dobbins, president of Ideal and Great Western Aggregates. A native of Pennsylvania, Mr. Brown joined the sales department of Ideal Cement Co. in 1948. Four years later he was placed in charge of GWA field experiments. In 1953 he transferred to the research center of Ideal at Fort Collins to assist in the development of an expanded shale lightweight aggregate (Idealite), and the search for proper raw materials. In 1955, Mr. Brown was appointed plant manager at Laramie, Wyo.

Perry Andreas given UN post

PERRY W. ANDREAS, president of North American Cement Corp., New York, N.Y., has been appointed finance chairman of the portland cement manufacturing industry for the United States Committee for the United Nations. This committee, now in its tenth year of activity, is a privately supported citizens organization whose chairman is appointed annually by the President of the United States. Working through 120 voluntary national organizations, the purpose of the committee is to "disseminate facts about the United Nations and to promote the observance of United Nations Day in the United States."

Huron names treasurer

JOHN B. FORD III has been elected treasurer of Huron Portland Cement Co., Detroit, Mich. He joined the company in 1953 and was named assistant treasurer in 1955.

(Continued on page 35)

News about Allis-Chalmers construction machinery . . .

Tractor power helps build Navajo Dam...40 stories high

Morrison-Knudsen Co., Inc. is sponsoring contractor on the Navajo Dam job in a joint venture with Henry J. Kaiser Co. and F & S Contracting Co.

Right now, the dam you see here exists only in the minds of its builders. Spanning a sun-baked canyon in New Mexico, it will create a lake 37 miles long . . . enough water to irrigate many thousands of thirsty acres. But towering Navajo Dam, one of the world's largest earth-fill structures, will take four more years to complete. Sponsoring contractor is world-famous Morrison-Knudsen . . . already moving the first of 26 million yards of dirt and rock that will test tractor performance and dependability as severely as any job can. M-K's choice — big Allis-Chalmers crawlers with turbocharged diesel power, hydraulic torque converter drive, and the toughest track ever made. Allis-Chalmers, Milwaukee 1, Wisconsin.

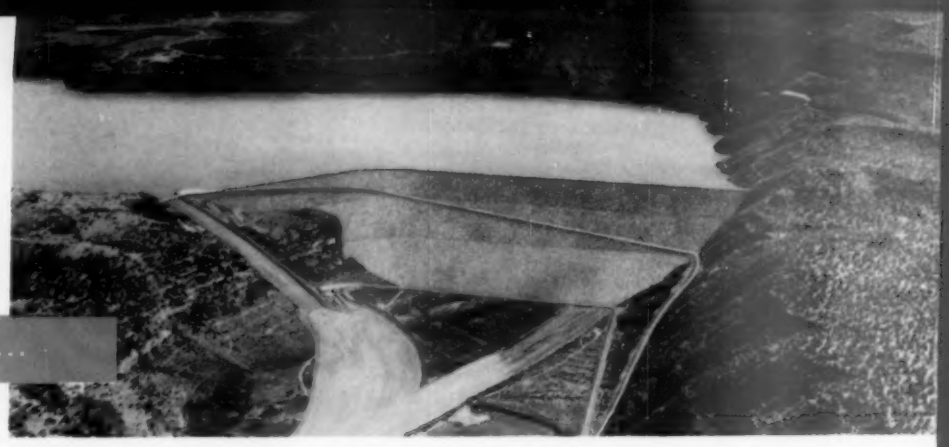
ALLIS-CHALMERS

Construction Machinery Division • Engine-Material Handling Division • Farm Equipment Division • General Products Division • Industrial Equipment Division • Nuclear Power Division • Power Equipment Division • Allis-Chalmers International

POWER **FOR A GROWING WORLD**

OVER

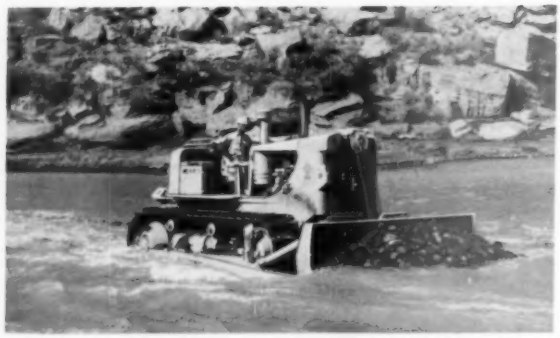
How it will look—The finished dam will be 3800 feet wide, 3200 feet thick at its base . . . and will create the biggest body of water in New Mexico.



picture report.....

Allis-Chalmers big HD-21's get Navajo Dam under way

24-foot-wide dozing team—Torque converter HD-21's match power and speed precisely, as they work together to push huge mounds of dirt and rock over the cliff to prepare for construction of a spillway.



No worries about river work—Positive-seal protection of vital track parts lets the HD-21's doze rock from the river bottom to form approaches for a temporary bridge without fear of lubricant loss or track damage.

Heavy-duty power for heavy-duty haul roads—Big Allis-Chalmers Forty Five motor graders fit the Navajo job to a "T." Clean, uncluttered design lets operator see both ends of the moldboard easily as he cuts a roadside ditch.

Four plus yards at a crack—This Allis-Chalmers HD-21G, biggest tractor shovel available anywhere, is helping to load about 40,000 yards of rock and dirt to clear the way for construction of a diversion tunnel.

See for yourself why Allis-Chalmers equipment was chosen for the Navajo Dam job. Your Allis-Chalmers dealer will demonstrate machines to fit your requirements . . . on your job—no obligation. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin

ALLIS-CHALMERS ***POWER*** **FOR A GROWING WORLD**

◁ OVER

MS-1317

Litho in U.S.A.

PEOPLE IN THE NEWS

(Continued from page 32)

Fibreboard firm names project manager

GEORGE W. BURGESS has been appointed project manager, manufacturing division, of Fibreboard Paper Products Corp., San Francisco, Calif., to develop new uses and applications for the company's gypsum products. A native of East Orange, N.J., Mr. Burgess graduated from Massachusetts Institute of Technology, Cambridge, Mass., with a B.S. in engineering.

Robert J. Drew has been named northwest district sales manager of the building materials division in Portland, Ore., succeeding Edwin A. White, who has been appointed manager of Hawaiian Island sales.

Robert K. Very has been made southern district manager, gypsum sales, and Paul B. Rayburn has been named southern district manager, roofing and asbestos-cement sales.

Norman L. Favors is newly appointed central district manager, roofing and asbestos-cement sales, and Howard H. Schryver has been made central district manager, gypsum sales.

Pacific Cement appointments

R. A. KINZIE, JR., formerly Davenport plant manager, has been named assistant chief engineer of Pacific Cement & Aggregates, Inc., San Francisco, Calif. Arthur Anderson has been appointed general superintendent of the cement division at the Davenport plant. Norman Jones has been made assistant general superintendent and chief chemist; Fritz Lindroth, quarry superintendent; Merle Whitesell, mill superintendent; Evert Whitesell, maintenance supeintendent; and Arthur Rochelle, electrical superintendent.

Riverside appointments

CHARLES R. CHAPMAN has been promoted from public relations representative to manager of community relations at the Crestmore plant of the Riverside Division of the American Cement Corp., Philadelphia, Pa. Mr. Chapman joined the company in 1956 as a personnel assistant, after graduating from Claremont Men's College, Claremont, Calif. Philip Harris has been named products development assistant to the vice president for manufacturing. Fred C. Hauff and Robert Carlisle have joined the engineering department staff at Crestmore, the former as an electrical draftsman and the latter as a mechanical draftsman.

(Continued on page 38)

One Mack leads to another. Proof is found in two Mack LRX 15-tonners, one shown here as it keeps Marquette's 2½-cu. yd. shovel hustling at the Cartersville, Ga., quarry. Deciding factor, when the company purchased the trucks, was the outstanding service given by Macks in other Marquette operations. For off-highway service of all kinds, Mack offers the most complete line of heavy-duty trucks and tractors.

MARQUETTE CEMENT SAYS:

MACK dependability helped us

On the go 120 hours a week. Each of Marquette's B-61 Mack diesels is at work 24 hours a day, five days per week—running up 3,360 miles of heavy duty hauling per week. Despite this arduous service, fuel mileage has averaged 6.6 mpg, and there has been no major engine overhaul or major parts replacement on any of the units—each of which has traveled over 250,000 miles.

How to move 1200 tons of crushed rock 28 miles per day. Marquette does it with 5 Mack B-61 diesels equipped with special trailers that haul 20-ton cargoes with ease and safety. One of these units is shown here unloading crushed limestone at Rockmart . . . helping keep the 380 x 12-ft. kiln in constant operation night and day.

Setting new records in safety and courtesy. Marquette receives many letters from local people who are impressed with the consideration and alertness demonstrated by the company's drivers. That's how Marquette planned it—picking only the finest and most courteous of drivers and equipping them with the most dependable of trucks—Macks. Together, this team has gone over 1½-million miles without a single accident.

beat a tough hauling problem

"Flawless performance by our Mack diesels—24 hours a day, month in, month out—is a major factor in helping us maintain peak production at our large-capacity cement plant in Rockmart, Ga.," says H. L. Restarick of Marquette Cement Manufacturing Company who is Superintendent there.

Marquette's plant is approximately 25 miles from their limestone quarry in Cartersville. After the stone is quarried—with the invaluable assist of two large-capacity Mack end-dump trucks—it's processed through a primary crusher and loaded aboard Mack diesels hauling specially designed bottom-dump trailers. The trucks take off for Rockmart, unload at the feeder there, and return. For optimum performance, each round trip must be made in two hours . . . and it always is.

"The important thing," says Mr. Restarick, "is that these Macks have performed like clockwork for over two years. They haul through all three shifts, five days a week, pulling 20 tons per trip. They've traveled a grand total of over a million and a half miles without overhaul and without an accident. If that isn't dependable performance, I don't know what is!"

Just as Mack cooperated closely with Marquette in evolving a plan that would beat their hauling problem . . . so Mack will gladly work with you . . . help you get the finest, most dependable, most economical hauling procedures possible. Call your Mack branch or distributor soon. Mack Trucks, Inc., Plainfield, New Jersey. In Canada: Mack Trucks of Canada, Ltd.

MACK
first name for
TRUCKS

PEOPLE IN THE NEWS

(Continued from page 35)

Cosgrove

Lilly

Alpha superintendents

GEORGE V. COSGROVE has been named superintendent of the Lime Kiln, Md., plant of Alpha Portland Cement Co., Easton, Pa. Mr. Cosgrove, who joined Alpha in 1951 as plant engineer at Manheim, W. Va., has been serving as combustion engineer for all Alpha plants. Lucius Lilly, who also joined Alpha in 1951, has been appointed assistant superintendent at the Lime Kiln plant.

Ideal promotions

WALTER E. ROHDE has been promoted to chief systems analyst, systems and procedures department, Ideal Cement Co., Denver, Colo. Formerly chief accountant, he will be succeeded by Robert W. Suppes, general auditor. A graduate of the University of Wisconsin, Madison, Wis., Mr. Rohde has been with Ideal for 10 years. Mr. Suppes joined Ideal in 1947 after graduation from the University of Denver with a degree in accounting.

General Portland officers

SMITH W. STOREY has been elected chairman of the board of General Portland Cement Co., Chicago, Ill., in addition to his duties as president and chief executive officer. E. L. Gibson, vice president in charge of engineering and operations, has been named executive vice president.

Universal Atlas appointments

W. OWEN LAWRENCE, assistant vice president-operating, Universal Atlas Cement Co., New York, N.Y., has been appointed to the newly created position of assistant vice president of engineering and research. F. P. Diener, formerly director of tests and research, has been named director of research, and Arthur Horen, director of raw materials, has been appointed assistant director of research.

Chester D. Rugen, assistant vice president of engineering, has been named assistant to the vice president of manufacturing, succeeding Francis A. Hennigan, who has been appointed assistant chief industrial engineer—operating.

J. Palmer Camm, plant manager at the Independence, Kan., plant, has been named general manager—operating, and Roald W. Nygaard, plant manager at Duluth, has been made assistant general manager—operating.

Alfred H. Zimmerman, assistant plant manager at Independence, has been promoted to plant manager, and Robert P. Jarrett, formerly assistant plant manager at the Fairborn, Ohio, plant, has been appointed assistant plant manager at Independence. He will be succeeded at Fairborn by Frank J. Weaver, power foreman. Carrol E. Aldrich has been named plant manager at Duluth, Minn. He was formerly assistant plant manager and will be succeeded by William F. Braun, who has been plant engineer.

Floyd Dodson, chief chemist and inspector at the Universal, Pa., plant, has been named assistant plant manager to succeed James E. Jenks, who has been appointed assistant plant manager of the Hudson, N.Y., plant, replacing Paul E. Patton, who has been made assistant to the plant manager at Hudson.

Marble Cliff director

R. W. BOWEN, general superintendent of Marble Cliff Quarries Co., Columbus, Ohio, has been elected to the board of directors to fill the unexpired term of the late E. J. Kauffman. A native of Logan, Ohio, Mr. Bowen joined Marble Cliff in 1919.

END

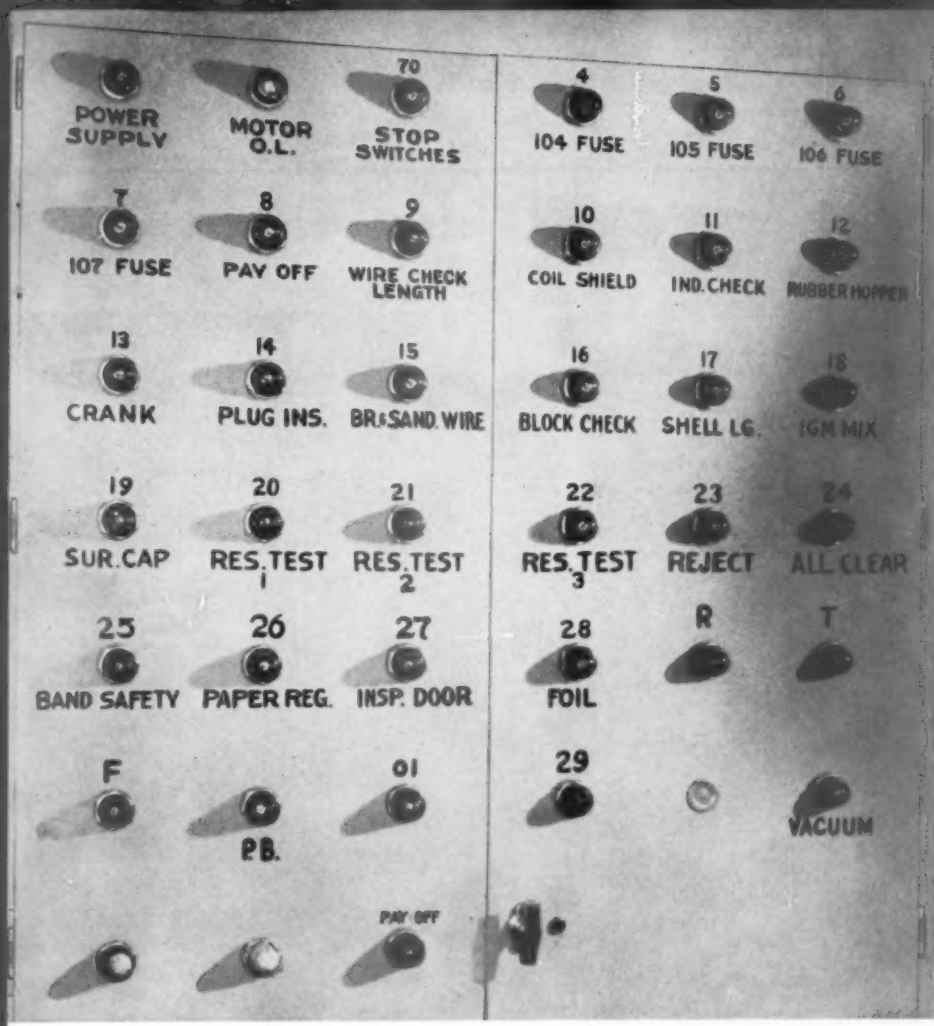
OBITUARIES

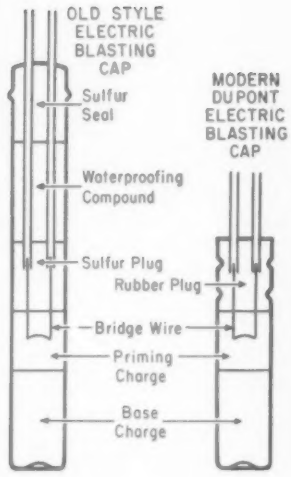
Thorkild Avnsoe, a director and formerly executive vice president and vice chairman of the board of directors of Lone Star Cement Corp., New York, N.Y., died September 9. He was 74 years old and had been associated with Lone Star for 47 years. As vice president in charge of operations for 24 years and executive vice president for seven years, Mr. Avnsoe was responsible for many developments in portland cement manufacturing. He was widely known in the cement industry for his interest in employe safety and welfare, establishing standards of employe safety and plant cleanliness, inaugurating regular safety meetings, foremen's dinners, and other means of improving employe working conditions.

A civil engineering graduate of the University of Copenhagen, Mr. Avnsoe was a member of the American Society of Mechanical Engineers and the Chemists Club.

J. Franklin Thomas, retired secretary-treasurer of the Gravel Products Corp., Buffalo, N.Y., died August 31 at the age of 83. Mr. Thomas joined the company in 1930 as an accountant and later was named treasurer. He became secretary-treasurer in 1940, retaining that position until 1957, when he retired.

John Baker Roberts, one of the founders of the Southern Materials Corp., Norfolk, Va., which was acquired by Southern Materials Co., Inc., in 1945, died at his home in Princess Anne, Md., on August 6, after a long illness. He was 79 years old and for many years had been identified with the construction and aggregates industries. Mr. Roberts was also instrumental in the founding of the Southern Lightweight Aggregate Corp., Richmond, Va.





SEE THE DIFFERENCE—The one at the right is the **modern** DuPont cap. It's shorter, easier to prime, but has the same load.

THIS CONTROL PANEL guides the assembly of every DuPont electric blasting cap you buy. It's the electronic "front office" of the world's most modern **(fully automatic)** blasting cap assembly line.

No chance of human error...

in this electronic "headquarters" of the world's most modern blasting cap factory...means even more dependable, more uniform caps for you

Here's the latest example of DuPont leadership in the development of better, safer blasting caps . . . a revolutionary, new, fully automatic, electronically-controlled manufacturing process to eliminate the possibility of human error.

Every step in the process, from automatically loading the shell to applying the shielded shunt and paper band, is electronically controlled. And as each cap goes through the line, it is inspected and tested dozens of times—automatically rejected if it doesn't meet our rigid standards.

AND NOW CONSIDER ALL THESE OTHER DU PONT ADVANTAGES . . .

1. The synthetic rubber plug which eliminated the old-fashioned sulfur plug, waterproofing compound and sulfur seal, giving a waterproof cap with a much shorter shell, easier to prime.
2. The famous shielded shunt which shorts the leg wires and positively shields them from outside sources of electricity.
3. Plastic insulation, more efficient, easier to see, easier to strip.

You get all these benefits with every DuPont blasting cap you buy . . . both regular and delay . . . at *no increase in cost.*

SEND FOR THIS FREE BOOKLET! See for yourself how DuPont makes electric blasting caps in the world's most automatic blasting cap factory. Read how automatic testing at every stage of manufacture assures you of the highest, most uniform quality.

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BETTER THINGS FOR BETTER LIVING . . . *THROUGH CHEMISTRY*

FACES AND PLACES

. . . Candid shots of people in the

Working around a hot forge

Hard, durable quartzite makes the best possible ballast for the North Western's tracks, but it takes a lot of difficult drilling to get the dynamite in to blast it. These men work 11 hours a day to keep up with the drill bit requirements of C&NW's quarry at Rock Springs, Wis. Elmer Hackbarth swings the sledge and Ed Hewitt holds the red hot, 650-lb. bit, a procedure they repeat 8 to 10 times per day. It usually takes less than an hour for the rock to blunt the 11-in. diam. bits sent down by the huge churn drill

Well worth the trip

Eric V. Puckle, left, a visiting Australian sand and gravel producer, saw enough of American production methods in the East, Midwest and West to make his trip worthwhile. Here, he inspects the sand classification system at the Felton, Calif., plant of Central Supply Co. He is with E. H. Neyens of the company's staff, high up on the water scalper. The Felton plant was one of the first in the West to install this type of classification system

Awe? you don't say

Our own western authority, Walter B. Lenhart, vouches for the authenticity of these cowboy relics—an interesting collection that he claims was the property of the notorious outlaw, Black Bart. L. A. Eiben treats the souvenirs with respect as he passes them around following the NCSA board meeting at The Homestead. Mr. Eiben is chairman of the NCSA Manufacturers' Division. I. F. Deister is at lower left

Well-oiled machinery

T. J. Henshaw is superintendent of the Boulder, Colo., fluorspar mill of General Chemical Division, Allied Chemical and Dye Corp. At this mill, ore mined in the Jamestown area is processed. It's a tribute to plant maintenance that since the screen behind Mr. Henshaw was installed in the crushing plant 16 years ago, no replacements have been required and bearings are still in service

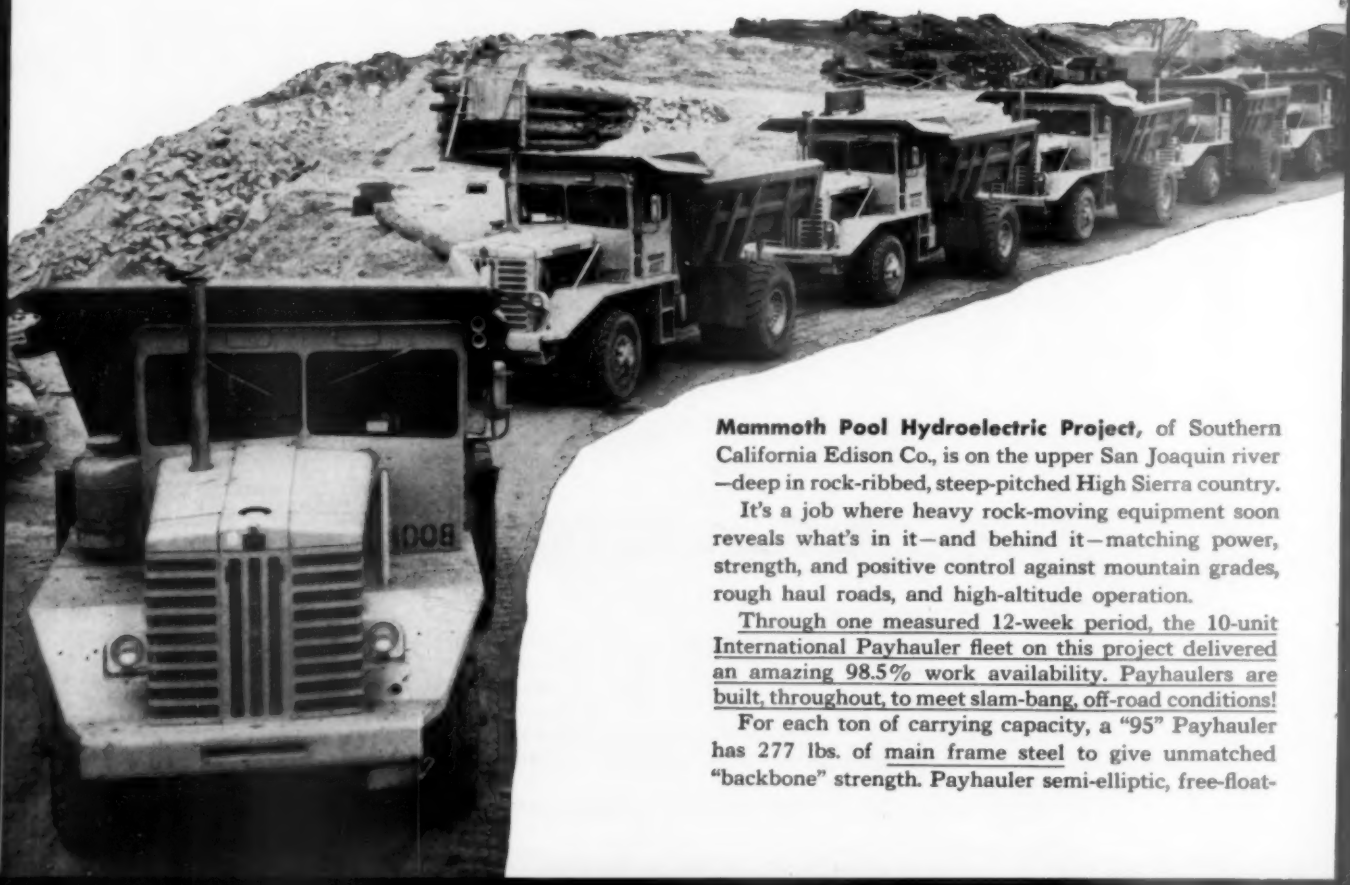
Well, he's a coach dog

The Dalmatian, "Ike," in this picture proves he's a coach dog by going along for the ride when his boss operates a giant bulldozer. His owner is Olen Humphres, the Ashmore, Ill., limestone producer who was taking advantage of a lull in business due to wet weather to push preparation of the new quarry he's opening. Mr. Humphres enjoys getting down in the quarry and running the big machinery, but he is also a "gentleman farmer" who breeds, trains and races horses. Much of his 520-acre farm is turned over to pasturage and grain for his thoroughbreds

"95" Payhauler® fleet delivers 98.5% availability

highballing rock loads over High Sierra grades

FOR SOUTHERN CALIFORNIA EDISON CO., LOS ANGELES



Mammoth Pool Hydroelectric Project, of Southern California Edison Co., is on the upper San Joaquin river—deep in rock-ribbed, steep-pitched High Sierra country.

It's a job where heavy rock-moving equipment soon reveals what's in it—and behind it—matching power, strength, and positive control against mountain grades, rough haul roads, and high-altitude operation.

Through one measured 12-week period, the 10-unit International Payhauler fleet on this project delivered an amazing 98.5% work availability. Payhaulers are built, throughout, to meet slam-bang, off-road conditions!

For each ton of carrying capacity, a "95" Payhauler has 277 lbs. of main frame steel to give unmatched "backbone" strength. Payhauler semi-elliptic, free-float-

"95" Payhaulers are "horsing" their 24-ton rock loads up grades as steep as 18%—on the Mammoth Pool Project! The "95's" Turbo-charged diesel engine develops 335 hp—the 18-ton "65's" is 250 hp!

Here's part of the 10-unit "95" Payhauler fleet parked during noon-hour, that established the amazing 98.5% availability record on Southern California Edison's Mammoth Pool Project!

ing springs gain extra shock-swallowing support from extra leaves and extra length. Payhauler speeds match every load and road. And Payhauler exclusive integrally-forged full-floating planetary drive axles take full-torque loads without over-stress.

This extra built-in stamina helps International Payhaulers establish standout availability records. And so does ready availability of parts and service from your International Construction Equipment Distributor's well-stocked bin and well-manned shop—backed by factory warehouse parts reserves.

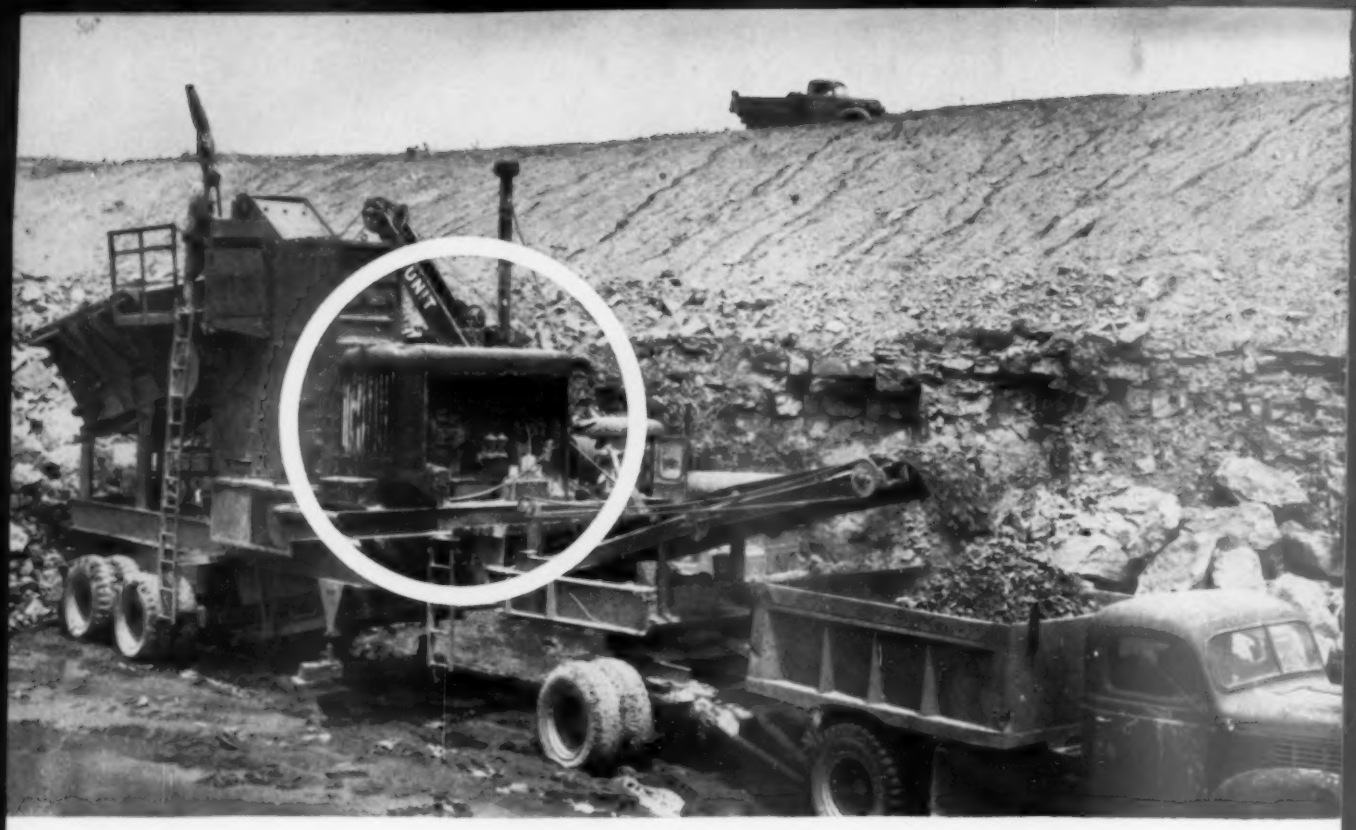
See how a Payhauler's bonus of Turbo-Charged diesel power assures you fuel-thrifty, big-load performance—even at high altitudes. Watch how power on Payhauler rear wheels helps deliver top operating efficiency on steep grades or mucky conditions—even where trailer-type units "spin their wheels." Prove that Torqmatic braking safely and positively controls the fully-loaded "95" downgrade—with little or no foot-brake help! See your International Construction Equipment Distributor for a demonstration!

Two rock-loaded "95's" are on their way—while a third one spots its big-target body for the shovel. Five International Planet-Power steered TD-24's and 12 UD-6 International power units on generators also help make this $50 million job roll!

International® Construction Equipment

International Harvester Co., 180 North Michigan Avenue

A COMPLETE POWER PACKAGE: Crawler and Wheel Tractors . . . Self-Propelled Scrapers . . . Crawler and Rubber-Tired Loaders . . . Off-Highway Haulers . . . Diesel and Carbureted Engines . . . Motor Trucks . . . Farm Tractors and Equipment.



One head gasket in 13,000 hours—that's the maintenance record of this UD-24 power unit shown pulling a 32 x 24 Universal impact breaker that produces 100 tons hourly of 3" minus base rock. Truck availability limits production.

UD-24 repairs: 1 gasket after 13,000 hours in quarry grit; owner adds UD-1091

Roy Baker's lips aren't sealed when it comes to talking about the superior sealing of International engines that he has depended upon for nearly 5½ years in his rock quarry at Valley Falls, Kans.

He reports, "Of course I bought a UD-1091—another International. What else could I do when our old UD-24 has gone 65 months, running up 13,000 hours by averaging 200 hours monthly in the heaviest work with dust and grit all around? This UD-24 still runs good as ever and the only repair it has needed has been a head gasket replacement. Pistons, rings, and sleeves are still untouched."

Roy's brief remarks speak volumes for International power on any pit or quarry machine—complete dependability over the years with heavy duty diesel construction fully protected by sealing that keeps abrasives from reaching wearing parts through air, fuel, or lube oil. And the added bonus is world famous International economy of operation.

See how little it costs to power your machines with these engines by checking your International Power Unit Distributor or Dealer. He sells a full line of complete power units ranging from 16 to 250 hp singly, or to 500 hp when compounded.

Roy's new UD-1091 power unit, rated at 202 int. load hp @ 1,500 rpm, powers No. 3 Grundler Hammer Mill producing 80 tons of ½" minus topping rock hourly.

International® Construction Equipment

International Harvester Co., 180 N. Michigan Avenue, Chicago 1, Illinois

A COMPLETE POWER PACKAGE: Crawler and Wheel Tractors . . . Self-Propelled Scrapers . . . Crawler and Rubber-Tired Loaders . . . Off-Highway Haulers . . . Diesel and Carbureted Engines . . . Motor Trucks . . . Farm Tractors and Equipment.

INDUSTRY NEWS

IMC moves into new administration center

INTERNATIONAL MINERALS & CHEMICAL CORP., Chicago, Ill., is now occupying its modern administrative and research center in outlying Skokie. The handsome new headquarters express the concept, according to IMC, that business must create a fitting climate for its future growth and progress. Functional design, beautiful use of color and strategic location of divisions, departments and offices, contribute to that concept. The center houses a total of about 600 workers. Because millions of miles of air travel are required each year by executives and technical staff, the company built its headquarters near O'Hare Field, Chicago's terminal for jet air travel. A heliport on the roof of the building puts this air service 10 minutes away.

Bestwall gets court OK to build new plant

BESTWALL GYPSUM CO., Ardmore, Pa., has received permission from Circuit Judge Fred M. Searl to construct a $2-million plant and gypsum mining operation near Grand Rapids, Mich. The firm went to court to get the permission after it had been denied by the Paris Township board. The state supreme court, ruling in favor of the plant, stipulated that restrictions in the operation be spelled out by Judge Searl, who earlier had upheld the Paris board.

The decree stipulates that the firm must leave in place pillars equal to one-third of the area mined, conduct blasting between 8 a.m. and 5 p.m., use the millisecond blasting method, keep a daily blasting record, protect the water supply of the property owners and enclose the mine opening inside a building.

Manufacturing stipulations include these: Bestwall must install efficient dust and smoke-arresting equipment to comply with strictest smoke and dust ordinance and comply with the township's ordinance with respect to disposal of waste. The firm must file with the court its development plans for the mine and maintain a mine map.

August sales best, says Alpha president

ALPHA PORTLAND CEMENT CO., Easton, Pa., had a very good August, better than any month since August, 1957, according to its president, Robert S. Gerstell. Per share earnings for the third quarter, he told *The Wall Street Journal*, would be about $1.10. This would compare with 86 cents a share for the first half of 1957. A $2-million third quarter would boost net income for the nine months ending September 30 to around $3.5 million, or between $1.90 and $2 a share, which would compare with $3,221,804, or $1.83 a share, for the like 1957 period.

Alpha, said Mr. Gerstell, will have total capital expenditures this year of $6,455,000 with $1.4 million budgeted for the first half next year. In September it opened its Lime Kiln, Md., plant, with a capacity of 2,250,000 bbl. per year. The company will be going ahead with modernization at certain of its plants, and will be building 100,000-bbl. capacity silos at its Jamesville, N.Y., plant to cost about $800,000.

Soil cement paving awards reach high

MORE THAN 22,310,000 SQ. YD. of soil cement paving was awarded for the first six months of 1958. This figure topped that of the same period of 1957 by more than 8 million sq. yd., according to the Portland Cement Association. Also, the 1958 awards were nearly double the 11,860,000 sq. yd. reported for the first half of 1955.

Merger would link J-M, glass fiber firm

JOHNS-MANVILLE CORP., New York, N.Y., has proposed a merger with L-O-F Glass Fibers Co., Toledo, Ohio, on the basis of one share of its common stock for 2½ shares of L-O-F common. The glass fiber concern, controlled by Libbey-Owens-Ford, makes woven materials and building materials and insulation from the fibers.

In 1957, L-O-F had sales of $23.3 million and net income of $1.1 million, equal to 41 cents a share. Last year Johns-Manville had sales of $308.3 million and net of $17.8 million, $2.48 a share.

Gravel firm acquires site

AMERICAN AGGREGATES CORP., Greenville, Ohio, purchased 108 acres of land near New Carlisle, Ohio, from Arnold C. Shaffer, a Dayton attorney. Sale price of the site was approximately $108,000. Shortly before, the company purchased another plot adjoining the Shaffer property.

(Continued on page 48)

NORDBERG Cement Mill MACHINERY

...quality-built to give you longer service life—lower operating costs

Recognized by the cement industry for its quality construction and resulting ability to assure maximum, continuous production at low operating cost is the extensive line of dependable Nordberg machinery.

Nordberg cement machinery includes Symons® Gyratory Crushers for primary crushing of raw materials; Symons Standard and Short Head Crushers for preparation of finely, uniformly sized raw mill feed; Symons Vibrating Grizzlies and Screens for scalping and sizing; wet and dry grinding rod, ball, tube and compartment mills; rotary dryers, kilns and coolers.

For dependable, low cost power, a complete line of Nordberg Diesels, in sizes to more than 11,000 hp are available to meet practically any cement industry power requirement.

If you are looking for ways to increase operating efficiency and lower production costs, it will pay you to investigate the advantages of Nordberg machinery and the technical engineering services available.

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This brochure illustrates the full line of quality Nordberg machinery designed and built for more efficient cement plant operation. Write for your copy today.

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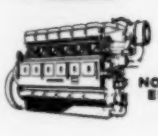
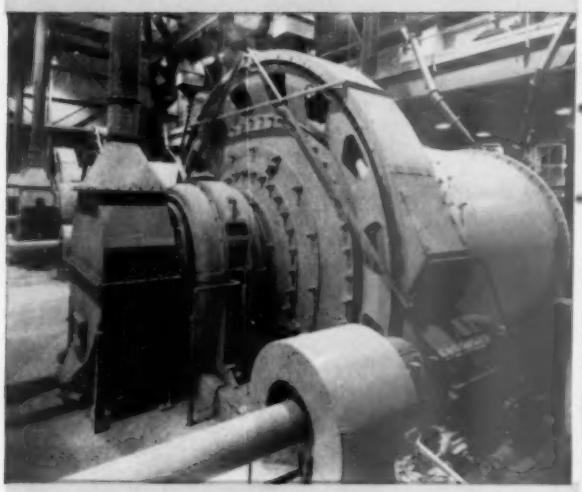
SYMONS CONE CRUSHERS


NORDBERG MINE HOISTS


SYMONS VIBRATING GRIZZLIES


SYMONS VIBRATING SCREENS


NORDBERG ENGINES

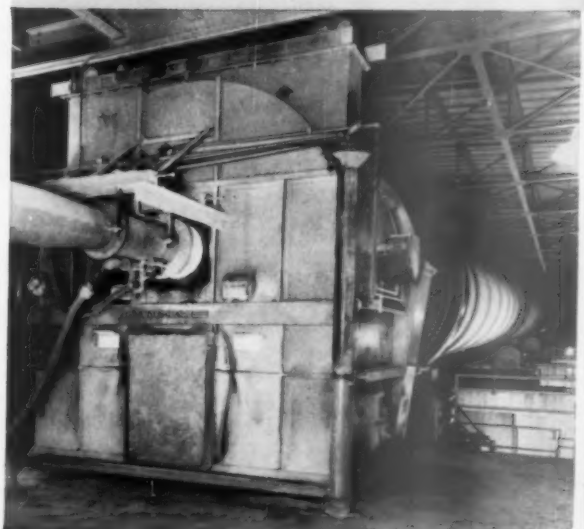


Directly above is a view showing one of three 11′ x 17′ Nordberg Grinding Mills recently installed for finish grinding operations at a large Midwest cement plant.

The large illustration at the right shows part of a group of five 11′ x 17′ Nordberg Grinding Mills installed for dry process service at a newly completed cement plant.

Illustrated at the right are two 11′ diameter x 360′ Nordberg Rotary Kilns installed during the recent expansion of a large Midwestern Portland Cement plant.

Shown directly below is a close-up view of a new Nordberg Rotary Kiln used in cement processing. Shown from the firing hood end, this unit measures 11′ in diameter x 380′ in length.



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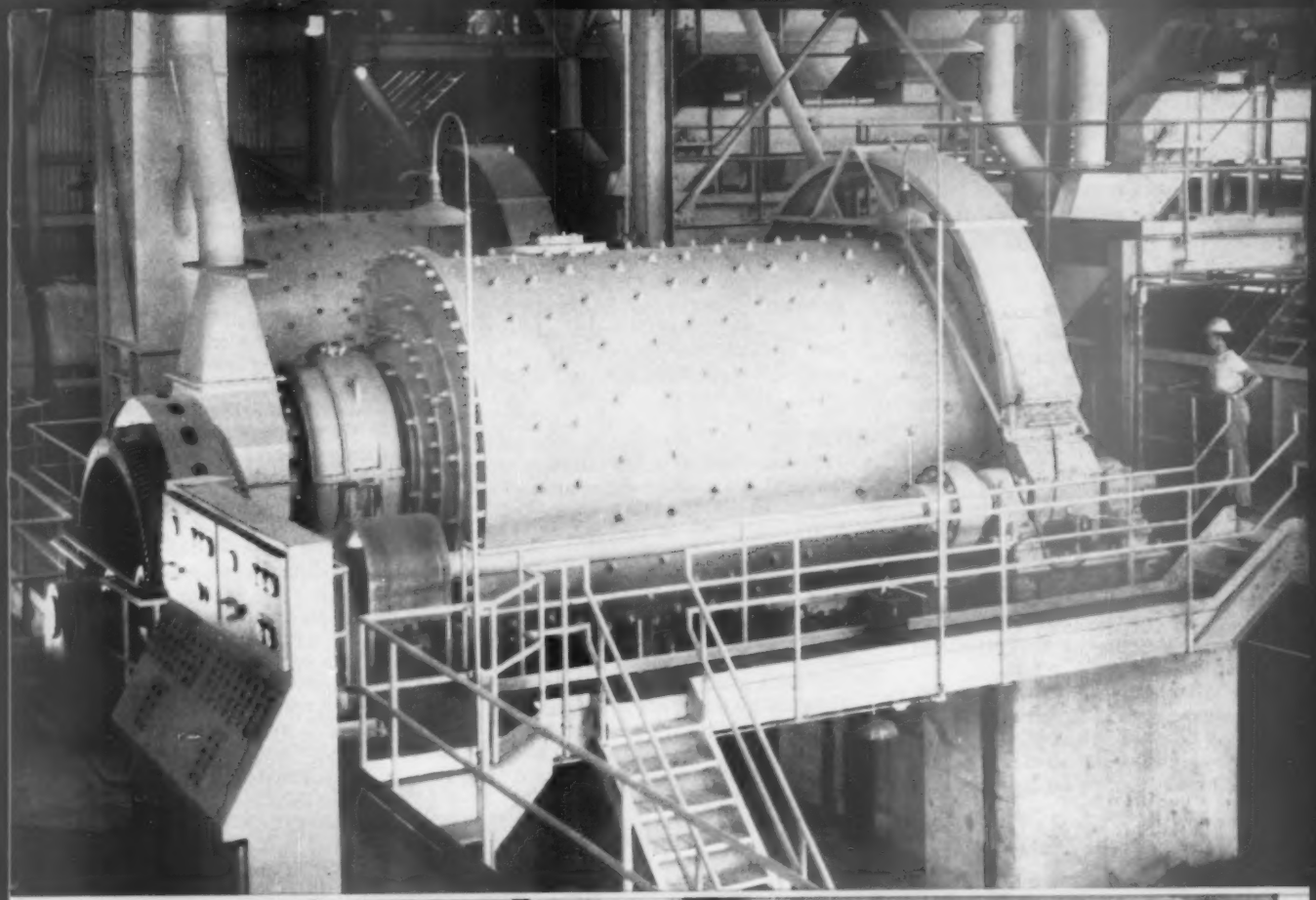
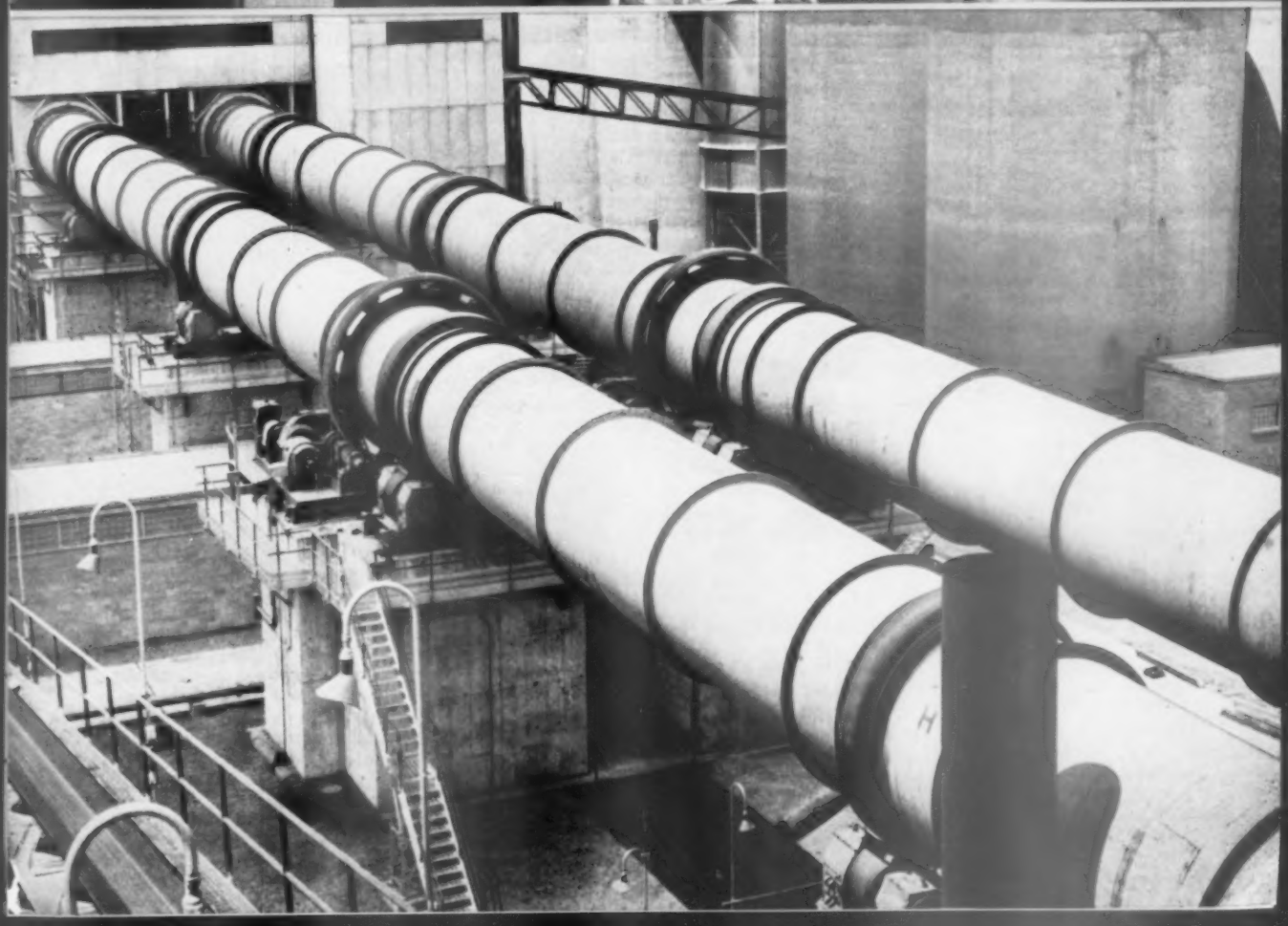




INDUSTRY NEWS

(Continued from page 45)

Highway trust fund spending exceeds receipts

THE HIGHWAY TRUST FUND paid out more than it took in for the second consecutive month, according to releases from the U.S. Treasury Department. During July, the first month of the third fiscal year of operation, expenditures from the fund were $204,313,236, while receipts amounted to $176,700,000. Comparable June figures were $216,953,867 and $172,010,658.

This is the first time since the Highway Trust Fund became "self-supporting" that a deficit has occurred in two consecutive months, observes the National Highway Users Conference. As a consequence, the balance in the fund decreased from $1,048,541,116 as of June 30, 1958, to $1,020,927,880 as of the end of July.

At the same time, $43,200,000 in unexpended cash reserves was invested in Treasury certificates to bring the total investment to $865,426,000. The interest rate is 2.5 percent.

Lime deposits found

DEPOSITS OF HIGH GRADE commercial limestone in Franklin County, Pa., have been reported in a study by the Mineral Conservation Section of Pennsylvania State University. Bulletin 71, titled "Commercial Possibilities of Some Ordivician Limestone in Franklin County," indicates that some of the potentially valuable deposits are suitable for manufacture of chemical lime. F. M. Swartz and R. R. Thompson, who worked on the project, said more complete sampling and diamond drill testing are required for full evaluation of the deposits.

Earnings gain reported by American-Marietta

THE HIGHEST SALES and earnings for any third quarter and nine months in its 45-year history were reported by American-Marietta Co. Sales for the third quarter ended August 31, 1958, totaled $71,297,082 and net income reached $5,524,827. For the same period in 1957, sales and net income were $59,092,611 and $4,677,278 respectively. Third quarter net income increased 55 percent above the $3,565,749 earned in the 1958 second quarter. The sales increase for the quarter was 19 percent.

For the nine months ended August 31, 1958, sales were $176,343,663, compared to $155,162,325 for 1957's nine months. Total net income for the 1958 nine months was $11,229,323, against $11,009,536 in the same period a year ago.

Reflecting the upturn in demand for American-Marietta's products, earnings per common share, after provision for preferred dividends and exclusive of restricted Class B shares, amounted to 61 cents in the 1958 third quarter. In 1957, when 1,149,706 less common shares were outstanding (adjusted for a 3 for 2 stock split), third quarter earnings equaled 60 cents.

Earnings for the nine months of 1958 amounted to $1.29 on each of the 8,057,304 common shares outstanding compared to $1.47 earned on 6,907,598 shares at the end of the 1957 nine months.

Pavement yardage

AWARDS OF CONCRETE PAVEMENT for the month of August and for the first eight months of 1958 have been classified by the Portland Cement Association as follows:

	Sq. yd. awarded during	
	August	1st 8 mos.
Roads	6,519,977	44,780,642
Streets and alleys	3,397,596	22,022,557
Airports	1,255,704	17,429,040
Totals	11,173,277	84,232,239

Florida phosphate exports show yearly increases

EXPORTS OF FLORIDA PHOSPHATE are holding their own in stiff competition from foreign producers, according to the Florida Phosphate Committee. The committee, representing six Florida companies producing approximately 75 percent of the state's output, said figures released by the Bureau of Mines showed Florida exported 2,605,000 tons of phosphate in 1957. This is 200,000 tons more than in 1956 and substantially more than the 1,879,000 tons exported in 1955. Florida's exports represent the bulk of U.S. phosphate business abroad. Total U.S. exports in 1957 were 3,010,000 tons.

The committee estimated the value of Florida phosphate rock used in exports last year at $16½ million. "Total value of all phosphate rock before processing as sold at Florida mines last year," the committee said, "was approximately $68 million for slightly more than 10.6 million tons. This represents a per-ton value of $6.38 for phosphate rock before processing." The export business represented about a fourth of its total sales last year, both in respect to the volume and dollar value.

Gravel travels two miles down mountainside

NINE FLIGHTS of rubber conveyor belting, extending more than two miles down a mountainside, have started a three-year task of hauling 20 million tons of selected clay and gravel for the building of Trinity Dam in northern California.

The conveyor installation, operating from barrow pit to the damsite, uses 42-in. wide belting. Traveling at the rate of 650 fpm., the belting will carry about 1,400 cu. yd. of fill material an hour.

It is now in full-scale operation, according to Trinity Dam Contractors, builders of the record-size, earth-fill dam. The conveyor system began partial operation on June 15 when the belt splicing and installation were completed by B. F. Goodrich field engineers in cooperation with the dam builders. More than 18,000 ft. of conveyor belting is involved.

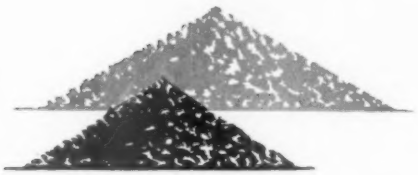
Five flights of the conveyor system (number four through eight) are downhill with an average grade of 25 percent. The total decline in that area is about 850 ft. The other four flights are over the typical terrain of Pettijohn Mountain which lies northwest of the damsite.

The material being hauled to the bed of the Trinity River channel is

principally decomposed andesite. Before it enters the conveyor system the oversize material is reduced to about 6 in. in a pit screening and crushing plant. The weight of the declining material makes it possible for the belting to generate electric power which is fed back into the main system.

(Continued on page 52)

A new concept in cleanliness! The new *ACL* system offers lower dust loss — cleaner cement production. Stack discharge is merely a wisp. Complete dust-free plants have been constructed within large cities and in suburban neighborhoods. The system meets even the most stringent municipal air pollution codes. Other advantages are: maximum burning efficiency, reclamation of material, power savings and small space requirements.



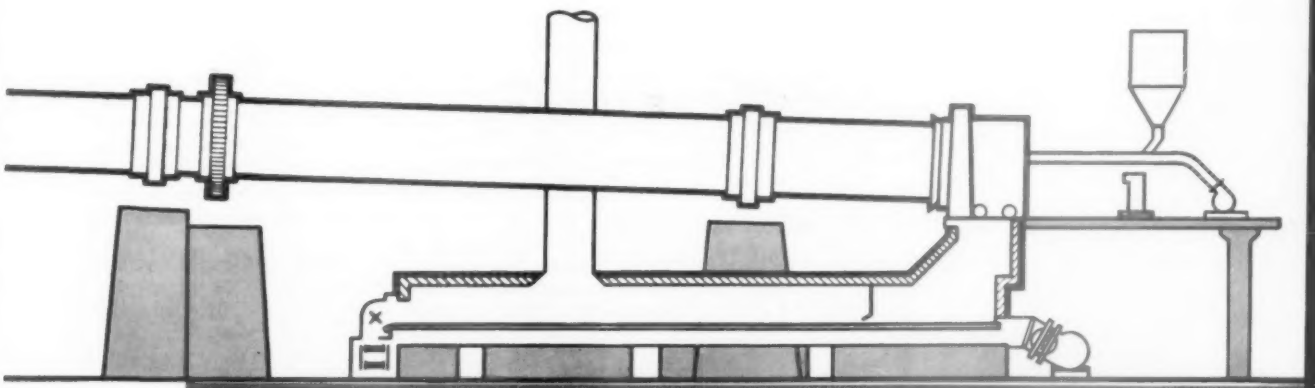
40% less fuel per barrel of clinker

ACL systems now in operation consume fuel at an average of 600,000 Btu per barrel of clinker. Compare this to fuel requirements of conventional long, dry-process kilns which use from 800,000 to 1,000,000 Btu. And the *ACL* double-pass system is designed to use any conventional fuel—powdered coal, fuel oil, natural or coke oven gas.

For details, ask your A-C man for a copy of Bulletin 07B8431. Or write Allis-Chalmers, Industrial Equipment Division, Milwaukee 1, Wisconsin.

How the *ACL* double-pass system works

Partial calcining and dust reclamation take place as hottest gases pass through pellet bed on traveling grate. Gas temperatures are reduced from about 1800 to 500 degrees in this first pass (A to B). Next, gases pass through cyclones where larger dust particles are removed, and carried back to pelletizer. Final dust filtering takes place as gases pass through moist pellets on feed end of grate. In the second pass (C to D) gas temperatures are reduced more. Heat of kiln gases is transferred to material.



ALLIS-CHALMERS

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INDUSTRY NEWS

(Continued from page 48)

Gypsum sales pickup "better than seasonal"

NATIONAL GYPSUM Co., Buffalo, N.Y., has had since May a better than seasonal pickup in sales, according to Melvin H. Baker, chairman. He affirmed, "July was the largest month in sales and earnings that we have had for two years." Mr. Baker said that he expected sales for 1958 to be somewhat in excess of $150 million, with earnings somewhat ahead of last year.

American Encaustic Tiling Co., Lansdale, Pa., was taken over by National Gypsum September 1. This will add better than $13 million to total sales for 1958, bringing volume above 1957. Mr. Baker said that the newly acquired company's sales were running about $1.2 million a month, and net income about $150,000 a month.

With the completion of the Great Lakes area projects next year—development of a gypsum deposit at Tawas City, Mich., and new mills in Waukegan, Ill., and Lorain, Ohio—Mr. Baker said the company contemplates new production from a Pacific Coast gypsum deposit.

Silica sand plant uses flotation process

PACIFIC CLAY PRODUCTS Co., Los Angeles, Calif., has opened a new silica sand plant at Camanche, Calif., near Sacramento. The operation produces a silica sand for use in the California glass industry with a feldspar content so closely controlled that the glass producers have no need to buy or store feldspar as an additive to increase the alumina content of the glass.

A flotation process is credited with closely regulating feldspar content, yielding an alumina content of 3¼ percent. A dozen or more minerals besides silica sand are removed during flotation and flumed to and impounded by a series of ponds. Plant capacity when producing silica sand is about 35 tph.

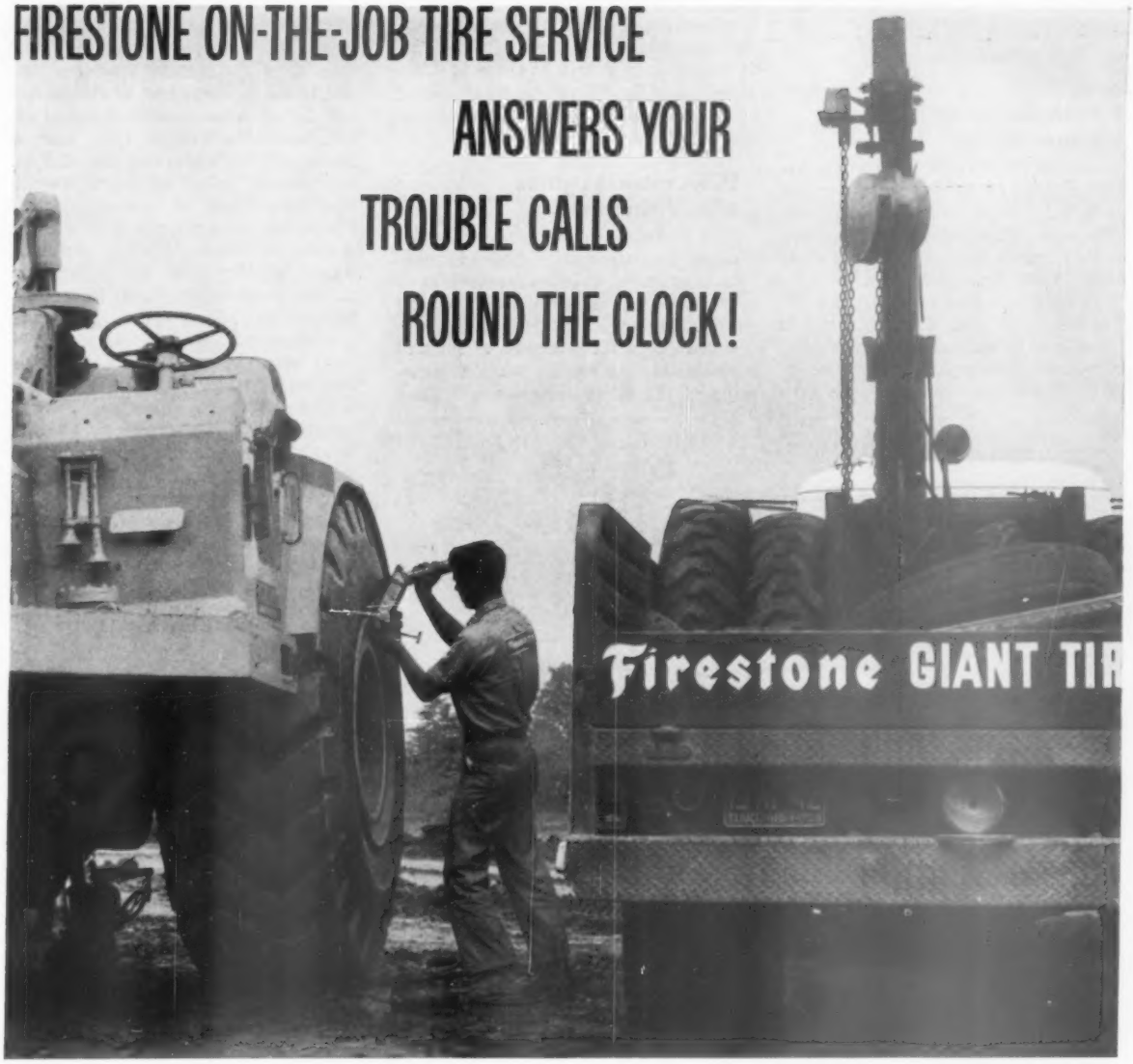
A Hardinge conical ball mill has been installed at the plant to wet grind washed sands before flotation. This mill formerly saw use at Tybo, Nev., mine of Treadwell-Yukon Co., Ltd.

Warehouse hit by blaze

CELOTEX CORP., Chicago, Ill., had a fire at its Port Clinton, Iowa, storage warehouse resulting in damage estimated at $1 million.

(Continued on page 54)

FIRESTONE ON-THE-JOB TIRE SERVICE ANSWERS YOUR TROUBLE CALLS ROUND THE CLOCK!



Firestone Giant Tire Service eliminates hours of costly downtime!

Firestone service trucks are on the job 24 hours a day to beat your downtime due to tires. Completely equipped trucks are ready to service construction tires on the spot. Trained servicemen have the know-how and the tools to handle the largest tubeless or tubed off-the-highway tires. Besides emergency tire service, a Firestone Tire Expert inspects tires regularly—checks for proper inflation. Count on Firestone to turn downtime delays into worktime profits! Contact your Firestone Dealer or Store about Firestone's Giant Tire Service. Combine Firestone's Giant Tire Service with Firestone off-the-highway tires to hold down tire costs. Remember—there's a Firestone tubeless or tubed tire for every piece of equipment on construction projects.

ROCK GRIP WIDE BASE® ROCK GRIP®
TUBELESS OR TUBED

When ordering new equipment always specify Firestone tires.

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Firestone

BETTER RUBBER FROM START TO FINISH

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(Continued from page 52)

Potash deliveries set new records

AMERICAN POTASH INSTITUTE has traced a rising production curve for potash deliveries, with 1957 consumption reaching a total of 2.2 million tons. This was a gain of a little more than 50,000 tons over 1956.

Domestic potassium salts felt a 10-percent price decline this year, and exports have been off slightly. Export shipments during 1957 amounted to 273,000 tons; this figure includes agricultural as well as chemical grades. Potash imports last year were placed by American Potash Institute at 220,000 tons for North America and at 166,000 tons for the United States.

ECSA assesses gains at midyear meeting

A FIELD DEMONSTRATION of design mixes for structural lightweight concrete, reports on advancement of a broad-phased research program, and evaluation of a commercial plant installation for the reduction of sintered clinker highlighted the midyear meeting of the Expanded Clay and Shale Association in Denver, Colo. R. A. Utiger, president of ECSA, and his firm, Cinder Concrete Products Co. of Denver, acted as host to the group.

Ralph C. Johnson, sales manager of Simplicity Engineering Co., said a Model 40 D-Centegrator installed in the "Beslite" plant of Light Weight Aggregate Corp. at Livonia, Mich., has proven very promising in the reduction of sintered clinker. A redesigned impeller has considerably reduced crusher maintenance. Better uniformity of end product, improved gradation and a greater output of fines were noted because of the ability to feed larger material than was possible with the preceding roll crusher. Working about 15 to 20 minutes out of each hour, the machine is producing 150 tons per hour at Livonia. Maintenance problems have been at a minimum.

Lucas E. Pfeiffenberger, technical director of ECSA, gave a comprehensive report on the association-sponsored program of research and testing. He emphasized that the program is a long-range one which aims at arriving at a comprehensive set of data on the performance of lightweight aggregates and other materials.

"The Marketing Challenges of Lightweight Aggregates" was the subject of a paper presented by T. R. Berger, executive secretary of ECSA. Mr. Berger said the techniques and opportunities for effective sales promotion of expanded clay and shale lightweight aggregates are broad and diverse. He underscored the importance of trade name identification, distribution of technical data and test results, and the use of printed media and other advertising forms to point up to architects, engineers and contractors the advantages of lightweight aggregate. "While these are people who want hard, statistical facts on why lightweight aggregates do an effective job, they are very receptive to imaginative literature, well-illustrated advertisements and unusual presentations," he said.

The second and final day was given over to a field demonstration of mix designs for structural lightweight aggregate concrete. Victor McIntyre, district engineer of Master Builders Co., presented the demonstration.

The association's annual meeting will be held in Cleveland in conjunction with National Concrete Masonry Association sessions in January.

•

ELKHORN STONE PRODUCTS CORP., Elkhorn City, Ky., was capitalized at $50,000 to mine and deal in limestone, sandstone, clay and silica deposits by Dan Jack Combs of Pikeville, Ky.

(Continued on page 57)

NEW CHEVROLET TRUCKS FOR '59!

New Might! New Models! New Money-Saving Power!

Task-Force 59 brings you more to work and save with in every weight class—more models, thriftier engines, stronger cabs and frames, safer brakes, tougher axles and transmissions! Here's the longest, strongest line of Chevrolet trucks ever built, the best yet of the best sellers!

Good news in the light-duty class! Chevy's longer, stronger '59 line gives you a *dozen* big pickups to choose from . . . new 4-wheel drive models, newly fashioned panels, Step-Vans, and Sedan Deliveries! Scores of innovations include new hard-pulling Positraction rear axle, new bigger brakes, new stronger cabs, new broad-shouldered styling refinements!

Bright new middleweight and heavyweight might! New big-tonnage L.C.F. and conventional trucks are heftier than ever with new 5-speed transmissions, new huskier clutches, more durable rear axles in capacities as high as 18,000 lbs.! G.V.W.'s go up to 36,000 lbs. in tandems . . . and up to 21,000 lbs. in new Series 50H and 60H models with heavy-duty components!

New thriftier 6's, all-new V8 power! Chevy's best selling 6's are set to pinch pennies like never before with new camshaft design, new valve train durability! *Six* modern V8's are tougher built for bigger savings; an all-new V8, the 185-h.p. Workmaster Special* with advanced Wedge-Head design, is offered in Series 70 and 80! See 'em for yourself—the bright new trucks of Task-Force 59 at your dealer's now! . . . Chevrolet Division of General Motors, Detroit 2, Michigan.

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THE NEW JOY TDM TRAC-DRILL

Now you can get faster drilling with less wear on bits, steels and drill rotation parts. You can get smoother, straighter holes for easy loading. The Joy TDM is a heavier machine with long, wide tracks . . . extremely stable. The extra weight and a heavy "U" bar drill mounting keeps the drill, the steel and the bit in perfect alignment in the hole. Spotting and collaring are easier because the feed is rigid.

All movements of the TDM are power operated. A big air motor (11.5 hp) powers each track for fast, precise moving. A powerful hydraulic pump powers the feed for swing, tilt and dump . . . fast, effortless positioning for drilling at any angle. Mounting the Joy TM-450 drifter drill, the TDM can put down a maximum 4″ dia. blasthole up to 40 feet deep. For mass production of deep holes, better check into the Joy TDM TRAC-DRILL. Write for bulletin 259-27.

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INDUSTRY NEWS

(Continued from page 54)

Highway film prepared by PCA

"PEOPLE AND MOVEMENT" is the title of a film premiered by the Portland Cement Association. Produced as a public service, the film is aimed at increasing the public's understanding of the planning behind the great new highways now being built.

The 17-minute, sound-color film discusses the changes in America's population and how these changes are affecting land use and movement in urban, suburban and rural areas of the nation.

Photography from all over the country shows super expressways—the new-type roads of tomorrow now under construction—redevelopment models, slum clearance projects and rural industrial developments. Some particularly dramatic footage taken from a helicopter shows southern California freeways. The film is available through the Portland Cement Association's 32 district offices.

Report covers Canadian asbestos

"THE CANADIAN ASBESTOS INDUSTRY," by E. J. Bonkoff, is a new booklet that provides an up-to-date and concise account of the industry and an assessment of how current developments may influence its future. This report covers the development of the asbestos industry in Canada, its structure, production, markets, exports and producing companies, and appraises its future prospects.

It covers Canada's foreign market for general bulk shipments of mine asbestos and the domestic market. Both of these are currently in a state of flux, which the author says is not wholly due to the recent recession in the North American economy, but is partly a consequence of the historical development and the inherent structural characteristics of the industry itself.

The Canadian Asbestos Industry, E. J. Bonkoff, General Research Associates, 4 Richmond Street East, Toronto, Canada—$15.50.

•

WESTERN MATERIALS, INC., Owensboro, Ky., has been capitalized at $10,000 to deal in rock and mineral mining, also contracting and construction. Officers are Ridley M. Sandidge, Sidney A. Neal and Marie Wimsatt.

(Continued on following page)

INDUSTRY NEWS

(Continued from preceding page)

Alberta silica sands used in glass fiber production

PEACE RIVER GLASS CO., Fort Saskatchewan, Alberta, Canada, has begun to use silica sands from the Peace River territory in its glass fiber production. Formerly it imported raw material from England. The firm has been in operation three years and chose the Fort Saskatchewan site, near Edmonton, because of its proximity to market demand, the Alberta oil fields and to material supply.

A new smelting plant was completed in October, which the firm hopes will raise production from 60 to 100 tons of products per month. At the same time, a second unit for manufacture of pipe insulation went into operation. **END**

STATEMENT REQUIRED BY THE ACT OF AUGUST 24, 1912, AS AMENDED BY THE ACTS OF MARCH 3, 1933, AND JULY 2, 1946. (Title 39, United States Code, Section 233) SHOWING THE OWNERSHIP, MANAGEMENT, AND CIRCULATION OF ROCK PRODUCTS, published monthly at Chicago, Ill., for October 1, 1958.

1. The names and addresses of the publisher, editor, managing editor, and business managers are:
Publisher — Maclean-Hunter Publishing Corp., 79 W. Monroe St., Chicago 3, Ill.
Editor—George C. Lindsay, 79 W. Monroe St., Chicago 3, Ill.
Managing Editor—Richard S. Huhta, 79 W. Monroe St., Chicago 3, Ill.
Business Manager—P. D. Allen, 79 W. Monroe St., Chicago 3, Ill.

2. The owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding 1 percent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a partnership or other unincorporated firm, its name and address, as well as that of each individual member, must be given.)
Maclean-Hunter Publishing Corp., 79 W. Monroe St., Chicago 3, Ill. The stockholders of the Maclean-Hunter Publishing Corp. are P. D. Allen, 255 Locust Rd., Winnetka, Ill.; Joseph J. O'Neill, 14 Lincoln Court, Lombard, Ill.; F. S. Chalmers, 86 Chestnut Park, Toronto, Ont., Canada; Horace T. Hunter, 120 Inglewood Drive, Toronto, Ont., Canada; Maclean-Hunter Publishing Co., Ltd., 481 University Ave., Toronto, Ont., Canada.

3. The known bondholders, mortgagees, and other security holders owning or holding 1 percent or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state.)
None.

4. Paragraphs 2 and 3 include, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting; also the statements in the two paragraphs show the affiant's full knowledge and belief as to the circumstances and conditions under which the stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner.

5. The average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the 12 months preceding the date shown above was: (This information is required from daily, weekly, semiweekly, and triweekly newspapers only.) . . .

P. D. Allen
Publisher

Sworn to and subscribed before me this 8th day of September, 1958
[SEAL]
June G. Martin
(My commission expires January 31, 1959.)

Amusement park operators* know that their rides must be exciting to be successful. But with the lives of riders and onlookers at stake, operators rely on *quality* wire rope to ensure . . .

a safe ride

Safety comes first, wherever wire rope is used. You may save a few pennies on the purchase of a "bargain" rope. But it will cost you *more* than you bargained for, if it results in injured personnel and wrecked equipment. Make sure you get *quality* wire rope—buy Wickwire Rope.

**Picture shows the Rocket Ride at Palisades Amusement Park, Fort Lee, N. J. Wickwire Rope provides the only support for each of these planes.*

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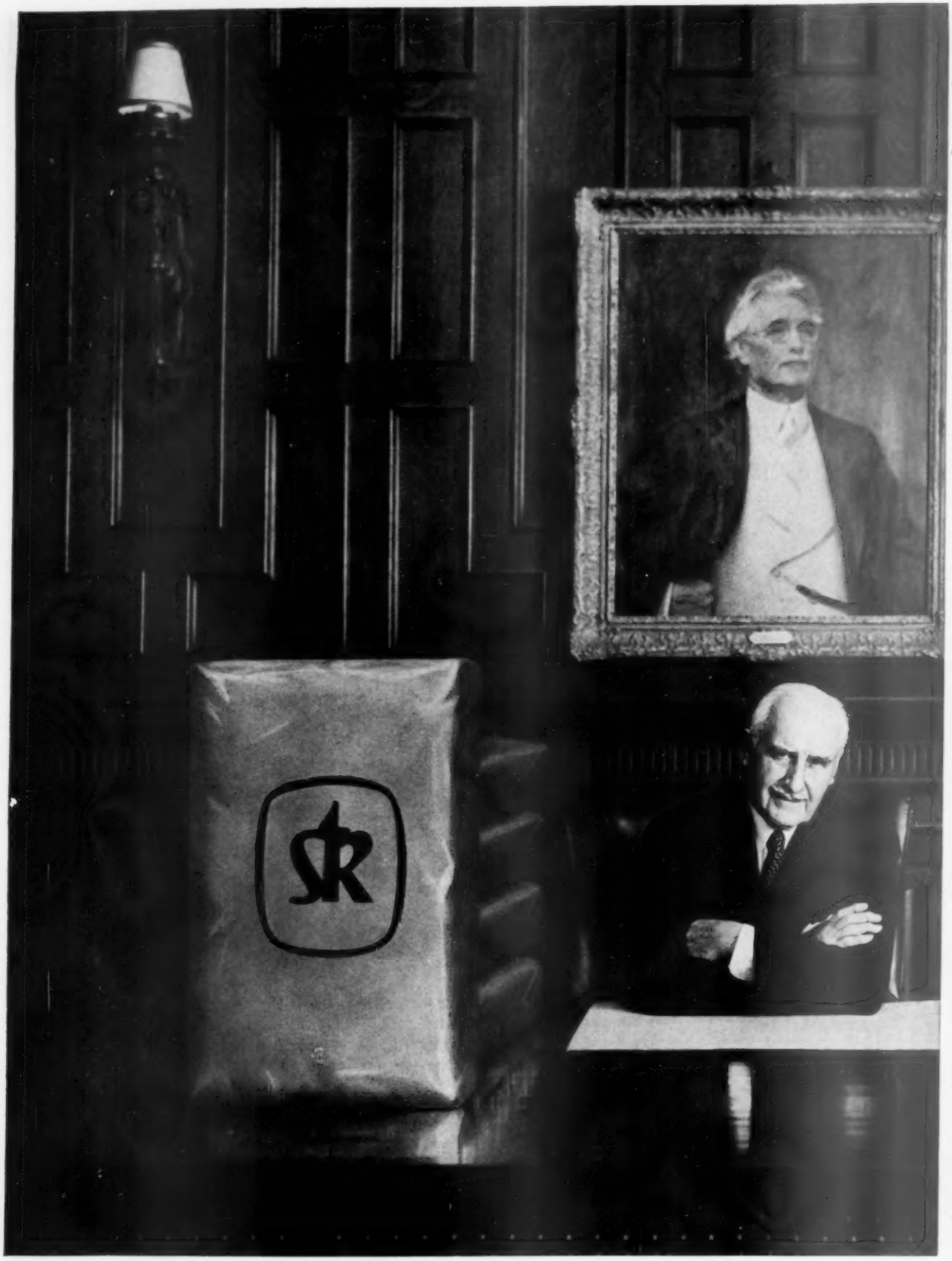
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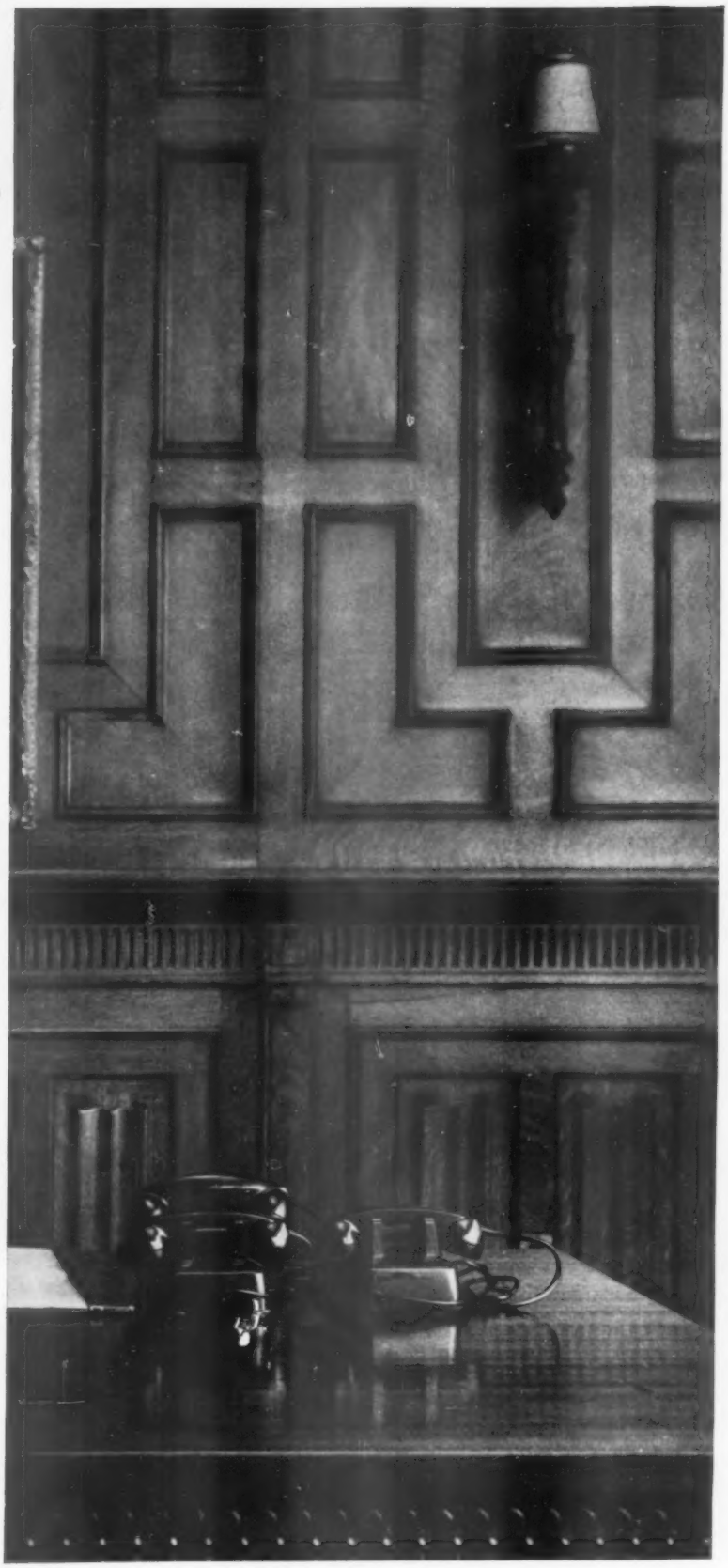

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Over the years, the money you've spent for St. Regis Multiwall Bags has grown in value. It has paid you a tangible capital return, for today you are packing in stronger, more sift-free stepped end bags. You get closer, more accurate weight control. Packing rates are high.

In time, you can expect even cleaner bags, automatic packaging, and other improvements St. Regis is already working on . . . all part of St. Regis' continuing effort to give you better bags, more efficient and lower-cost ways to pack and handle them.

Each such betterment in bags, every modification of machinery means heavy investment beforehand. Each requires research, careful product development; experimental models, pilot runs, field tests . . . before each improvement is made available to the field for use. None of this can be possible without the purchases the Cement Industry makes from St. Regis.

For the future, you can be sure of this:

You can continue to look to St. Regis for improvements in cement packaging . . . bags that are even cleaner, machines that are more efficient than ever before.

This promise can be made for just one reason; the Cement Industry's purchases of Multiwall Bags permit St. Regis to carry on the costly developments that will better your packaging of cement and lower your costs.

This is the capital return that comes built into every St. Regis bag you buy.

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MULTIWALL PACKAGING DIVISION

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Calendar of Coming Conventions

1958

November 18-20, 1958—
National Conference on Air Pollution, Sheraton-Park Hotel, Washington, D.C.

1959

January 19-21, 1959—
National Agricultural Limestone Institute, 14th Annual Convention, Hotel Statler, Washington, D.C.

January 21-22, 1959—
National Crushed Limestone Institute, 4th Annual Convention, Hotel Statler, Washington, D.C.

January 27-30, 1959—
National Crushed Stone Association, 42nd Annual Convention, Bal Harbour Area Hotel Group, Miami Beach, Fla.

February 2-6, 1959—
American Society for Testing Materials, Committee Week, Penn-Sheraton Hotel, Pittsburgh, Pa.

February 15-19, 1959—
National Sand and Gravel Association, 43rd Annual Convention, Hotel Roosevelt, New Orleans, La.

April 6-8, 1959—
National Lime Association, Annual Convention, Homestead, Hot Springs, Va.

June 21-26, 1959—
American Society for Testing Materials, Annual Meeting, Chalfonte-Haddon Hall, Atlantic City, N.J.

September 13-18, 1959—
American Society for Testing Materials, Third Pacific Area National Meeting, Sheraton Palace Hotel, San Francisco, Calif.

September 27-30, 1959—
National Sand and Gravel Association, Semi-Annual Meeting, Board of Directors, Lake Placid Club, Lake Placid, N.Y.

Lone Star president expresses optimism

LONE STAR CEMENT CORP., New York, N.Y., held its regular board of directors' meeting in Seattle, Wash., for the first time since it acquired Superior Portland Cement Co. last year.

H. A. Sawyer, president and chief executive officer, paid tribute to the "fine organization" acquired in the Superior company. With reference to the Seattle acquisition, he said the staff and departments have been consolidated, the $2 million in debenture bonds of Superior have been called and retired and all salaried employes have been integrated into Lone Star's pension plan.

Lone Star now has 21 plants in five countries serving a large segment of the Western Hemisphere. Fifteen of the plants are in the United States. The company also operates in Cuba, Brazil, Uruguay and Argentina. The company has doubled its capacity since the end of World War II. During the period to the end of 1957 the company expended about $170 million for new fixed assets. Total productive capacity is close to 50 million bbl. annually.

Ripper production up 50%—costs down 25%

Dozing production up 20%—costs down 10%

—with a Caterpillar D8 Tractor with No. 8 Ripper and No. 8U Bulldozer!

There has been steady improvement in the production efficiency of the Ocala Lime Rock Corp., Ocala, Florida. Previous method of breaking up the lime rock was blasting. Then the firm turned to ripping with a Cat D8 Tractor and a tow-type ripper. The final step has been the addition of the advanced tractor-mounted No. 8 Ripper and No. 8U Bulldozer to the D8. Now production is up to 400,000 tons per year.

L. W. Fielding

Reports L. W. Fielding, superintendent: "The D8 with No. 8U blade and No. 8 Ripper increased ripper production about 50% and reduced ripping costs per yard by 25%. The No. 8U increased 'dozing production 20% while cutting 'dozing costs 10%." And he adds: "It's been the continued good service and performance like this of our Cat-built Tractors and Engines that have kept us in the Caterpillar family 18 years."

The D8, with modern, scientifically-designed U-shaped bulldozer and the tractor-mounted ripper, can increase production at your mine, too. Today's D8 is more powerful, more durable than ever before. Outstanding features include special rock track shoes—and the exclusive Caterpillar oil clutch, which operates for thousands of hours without adjustment.

Your Caterpillar Dealer has the whole story. Call him for the facts and a profit-proving demonstration.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

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FIND YOUR CATERPILLAR DEALER IN THE YELLOW PAGES

BOOST PRODUCTION, CUT COSTS WITH THE D8

The passing of the rotary kiln

*By J. C. Witt**

IN THE PORTLAND CEMENT industry there have been only two types of units employed extensively for the preparation of clinker. When portland cement was patented in 1824, the vertical kiln was the only clinker-producing unit available. As the crudity and the disadvantages of this unit became more and more apparent, these led to the development of the rotary kiln about 1866, and eventually to the development of pulverized coal, permitting the use of solid fuels in the new unit.

The invention of the rotary kiln represented a truly great advancement in technology. Clinker of improved uniformity could be produced by a continuous process, with much less labor. With its production of billions of barrels of cement, a constituent of billions of cubic yards of concrete, the rotary kiln has proved to be one of the world's most important mechanisms.

But soon some disadvantages of the rotary became recognized.

- Exceptionally low thermal efficiency makes it one of the most wasteful fuel-burning mechanisms.
- Long time required for clinker formation.
- Inflexibility of operation.
- High capital investment.

The increase in the number of types of cements on the market has made inflexibility particularly troublesome, in addition to the large dimensions of the kiln and the complexity of the kiln system.

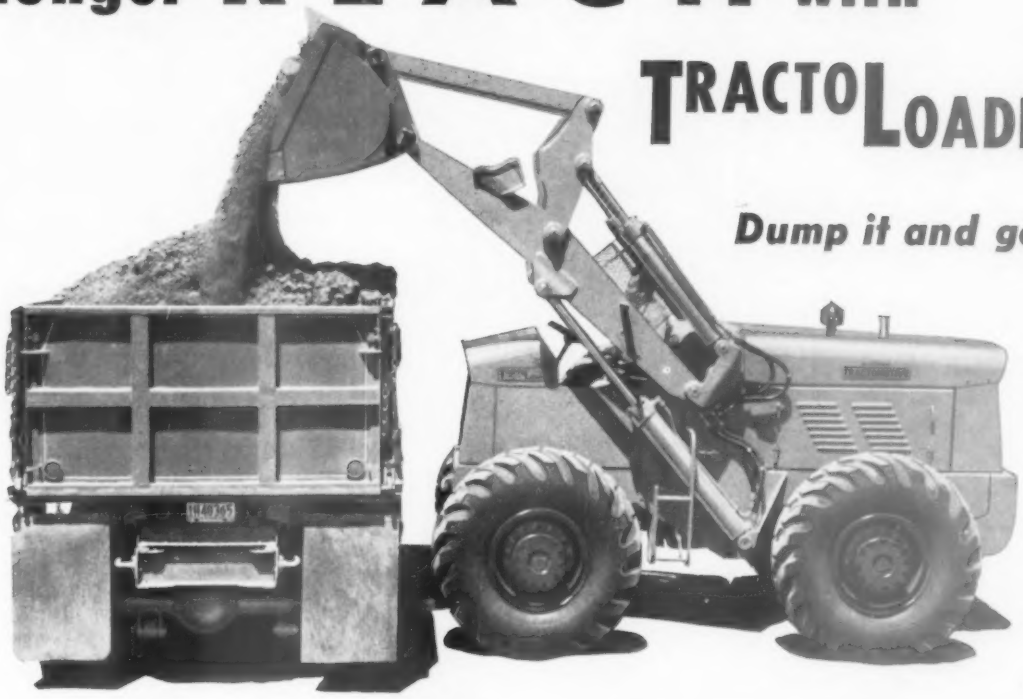
Years of plant operation, experimental engineering and research have convinced me that although improvements of the rotary might decrease its disadvantages, an entirely new unit was required for the continued rapid development of the industry. Until recently no other expression of opinion has come to my attention, but within the last year there have been several independent opinions with no disagreement except the time when the replacement is to take place. A member of the Portland Cement Association staff is quoted as saying: "Abolition of the rotary kiln or complete automation of a plant, although both are being worked on by many engineers, are yet some years away." The reason for such a long delay is not stated.

I have developed and obtained patents on a clinker-producing unit in which whirling jets of raw materials are forced into head-on contact with jets of burning fuel whirling in the op-

*Consulting Engineer, Chicago.

(Continued on page 66)

Longer R·E·A·C·H with TRACTOLOADERS®



Dump it and go...

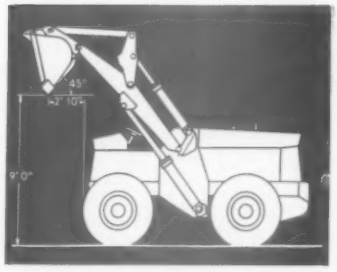
It doesn't matter whether your trucks are seven feet high or nine feet high . . . you load them all faster with the long-reaching TL-20 TRACTOLOADER.

Here this 2-yd loader is dumping right into the center of a 12-ton truck, 8 feet high, 8 feet wide. No wasting time dozing loads with bucket to distribute them evenly. No loading from both sides of truck to get full payloads.

The TL-20 even has enough reach to load gondola and hopper cars! You always have at least 34 inches of usable dumping reach* . . . and with special long booms you can dump to a height of 11 feet, 4 inches, with 39 inches of reach.

Here is another Tractomotive design difference that makes a performance difference — and a profit difference!

Longer-reaching, faster-dumping TRACTOLOADERS are available for both inside and outside use — 2 and 4-wheel drive.



***USABLE DUMPING REACH** is measured from the foremost point of front tires to cutting edge of bucket in dumped position (as illustrated).

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ROTARY KILN

(Continued from page 64)

posite direction. This has been named the counter-cyclone clinkerer and is outlined in U.S. patents 2,489,211 and 2,634,116. The direct and continuous application of high-temperature heat results in the synthesis of clinker minerals in several minutes, rather than in several hours, as with the rotary kiln. Many advantages can be listed—the small quantity of raw materials in process, no large moving parts and low investment per barrel of clinker.

The basic principles of this unit have been well established by two years of pilot plant operation and study. It is not perfect in all details, but the important problems have been solved with the exception of wall coating; but after ninety years of operation the rotary kiln still experiences this difficulty. Additional pilot plant work is needed before designing a commercial unit. The potential importance of the clinkerer is so great that the cost of any additional pilot plant activity may be considered negligible. While the new developments concern portland cement, they are readily applicable to other products made in rotary kilns.

A nonaqueous liquid cement manufacturing process which I have developed should be mentioned here. This development has been entirely independent of the clinkerer, but some interrelations exist, and its use in connection with the clinkerer is to be recommended. The process permits a plant operator to pin-point the composition of raw mix and to maintain that composition within slight variations. The process is also applicable to the preparation of cement from clinker, with satisfactory results. One outstanding feature of the nonaqueous process is the method of collecting dusts and their return to the system.

END

Portland cement production

PRODUCTION OF FINISHED portland cement in July, 1958, as reported to the Bureau of Mines, totaled 29,833,000 bbl., an increase of 47 percent over July, 1957. Mill shipments totaled 32,281,000 bbl., an increase of 26 percent compared with July, 1957. Stocks of 30,647,000 bbl. of finished portland cement on hand July 31, 1958, were 26 percent more than those on hand a year before. Clinker production during July, 1958, totaled 28,240,000 bbl., an increase of 62 percent over the year-earlier figure. These figures were provided by 163 plants in 37 states and Puerto Rico.

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Take a tip from your family's dependence on "nature's most nearly perfect food". Coal is nature's most nearly perfect fuel. It's here in abundance for ages to come, a dependably low-cost and most efficient source of "go power"! It's convenient too —right on *Industry's* doorstep.

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HINTS AND HELPS

Profit-making ideas developed by operating men

Electric eyes—new tool for rock products producers

THE PHOTOELECTRIC CELL, better known as the "electric eye," is finding wider use in many rock products producers' plants.

A western aggregates producer finds that he saves power, wear and tear on his equipment, and dispenses with the services of one man by installing an electric eye at his truck dump hopper.

As the truck passes through the electric beam, the photo-cell starts a feeder and a stacking conveyor. A relay keeps this equipment going a predetermined time—long enough to empty the surge hopper. Then everything stops until the next truck appears.

Another aggregates producer in the West uses electric eyes for traffic control on one job. Since his trucks must cross a major highway, this would normally be a traffic hazard. With highway department permission, he has rigged up photoelectric cells across his private haulage road which light a red traffic light at the intersection with the arterial highway. This arrangement permits his trucks to cross the highway at top speed, without concern for traffic. Here again, a relay in the circuit holds the light red long enough for the truck to get across before returning the green signal.

"Do it yourself" in the cement mill

THIS WEST COAST cement plant doesn't believe in wasting any time to keep their cement haulage rigs on the road as much as possible. Each silo is fitted with a hand-operated valve which each truck driver opens and closes to load his own truck.

Of course, each steel silo has a quadrant air agitation system to keep the finished portland cement in constant agitation. By opening the truck loading valve, loose, aerated cement flows rapidly to the truck.

One for two

WE'RE ALL FOR CONSERVATIVE design for the rugged service in most rock products producers plants. But every once in awhile this results in too much equipment to be maintained.

A crushed stone producer originally installed a pair of fine screens under his heavy scalping screens in an effort to maintain top screening efficiency for his fine materials. He was not content just to let them stay put after installation. A careful daily check of the volume of material coming off each deck showed that the two small screens were grossly underworked.

It cost some money to take out one of these screens and to rework some tricky collecting chute-hoppers. The net result is a more balanced installation. The savings in screen operating cost and savings in screen maintenance will quickly offset the original cost of making the changes.

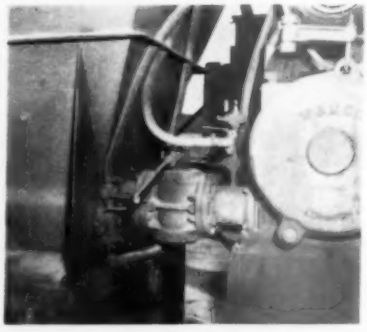
Wheels are useful

RUBBER-TIRED WHEELS of practically any diameter or weight have proven to be extremely useful around several rock products plants we have visited.

A midwestern stone producer wished to increase the capacity and to make his portable belt conveyor much steeper. This could be done by adding angle cleats to the belt, but then the straight-face steel support rollers for the return side had to be removed. This left the belt swinging in the air without support for forty feet.

A display of semi-pneumatic wheels at his local hardware supply dealer provided the answer—rubber-tired wheels to support the return run of the cleated belt. The wheels are mounted on shafts bracketed to the underside of the conveyor frame, and the brackets spaced closely enough to prevent the belt catenary from swinging free of the support rollers. There is enough "give" in the tires to allow the cleats to travel without hanging up, and the tires rotate as they support the belt. Since the wheels are inexpensive and readily available there's no problem of replacement.

Sand pump care



SOME TYPES OF SAND PUMPS do not have any suction and they must be fed by gravity. Their continued good operation depends upon the head, and it is usually wise to follow the manufacturers' recommendations exactly.

But even under the best of operating and installation conditions the connection between the head tank and the suction side of a pump may sand up.

(Continued on page 72)

US RUBBER CONVEYOR BELTS

Higher speeds, greater loads, longer life

The unusual thing about this self-propelled loader is the fact that it is equipped with a *4-ply* belt which is turning out a more satisfactory performance than the *5-ply* belt it replaced. This 4-ply belt is a U. S. Rubber Giant® (style EN), 54′ long, and is doing such a good job that the operator is very well satisfied with its excellent performance.

The service is rugged—handling sand and gravel at speeds up to 700 fpm over small pulleys, under severe weather conditions, sun and ozone.

These belts—like all "U. S." belting—are engineered to always assure you of cost-saving performance and durability. Belts to service your requirement are available, right from stock, at your local "U. S." Distributor.

• • •

When you think of rubber, think of your "U. S." Distributor. He's your best on-the-spot source of technical aid, quick delivery and quality industrial rubber products.

US RUBBER

Mechanical Goods Division

United States Rubber

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For The Ultimate in DUST COLLECTION Be Sure It's...

WESTERN PRECIPITATION *First* in Electrical Precipitators

Plant operators who want the finest equipment available for dust collection will find nothing to equal the long life, high efficiency and low maintenance of ***Western Precipitation*** Electrical Precipitators.

The reason is simple – No other electrical Precipitator is backed by so many years of leadership in the field – nor incorporates so many outstanding advantages pioneered by the industry's most experienced organization in the development of Cottrell equipment – experience beginning with the world's first commercial Cottrell installation!

This cross-section of a typical Western Precipitation Electrical Precipitator shows a few of the many important details that go into the construction of these units...

CONSTRUCTION FEATURES

▶ Arrangement of curtains (1), baffles and hi-voltage wires (2) assures optimum uniformity of electrical field – therefore maximum collection efficiency.

▶ Baffles (3) insure minimum dust reentrainment and optimum gas distribution.

▶ Curtains and hi-voltage system are engineered for maximum stability, even distribution of rapper impact, and unequalled ease of installation.

▶ No moving parts in the gas stream.

▶ Supports (4) for hi-voltage system are specially designed to resist side thrusts, and require minimum maintenance.

▶ Internal stiffeners permit clean, smooth external surfaces for easy insulation (5).

▶ Air-swept insulator compartments (6) insure long life, minimum maintenance.

▶ Unobstructed free-flowing hoppers (7) permit complete dust evacuation.

ADVANCED RAPPER DESIGN

▶ Frequency and intensity of rapping is variable over wide ranges to eliminate puffing and meet individual operating requirements.

▶ All rappers (8) are external for easy adjustment and maintenance.

▶ Flexible mounting – either side or top.

SAFETY ENGINEERED

▶ Hi-voltage insulators (9) are protected by separate compartments with individual access (10).

▶ Quick-opening access (11) doors are positive-sealing.

▶ Complete interlock system available at minimum cost.

"TRANSISTOMATIC" PRECIPITATOR CONTROL

▶ No tubes, no relays, no moving parts – *carries lifetime guarantee!*

▶ *Infinitely* variable precipitator voltage to suit operating conditions.

▶ Automatically compensates for line voltage fluctuations.

Before finalizing plans for installing any dust or fly ash collection equipment, get the full story on the finest collection equipment available – Western Precipitation Cottrells!

WESTERN PRECIPITATION CORPORATION

Engineers and Constructors of Equipment for Collection of Suspended Material from Gases . . . and Equipment for the Process Industries

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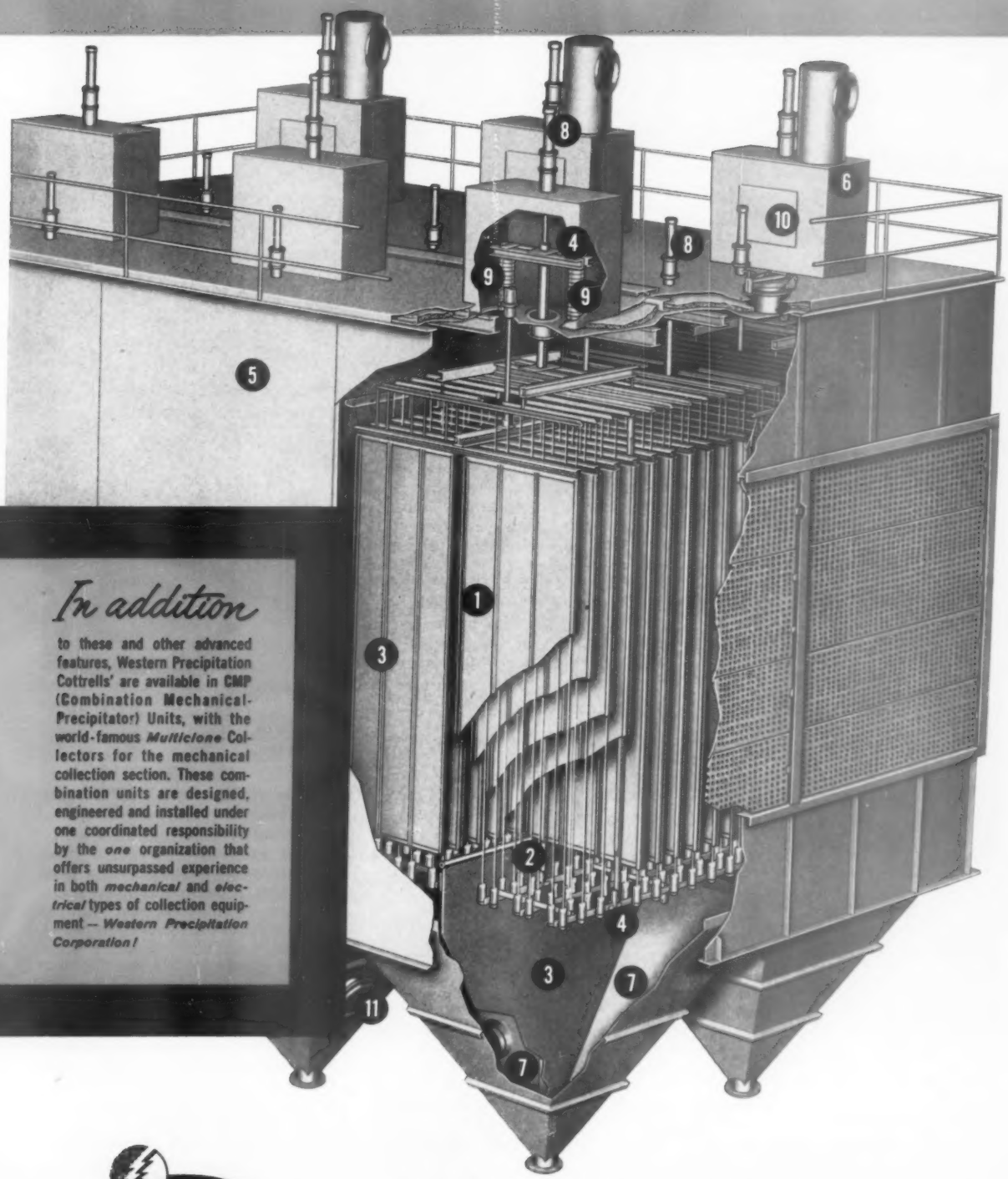
Precipitation Company of Canada Ltd., Dominion Square Bldg., Montreal

The only equipment backed by a *Half-Century of Cottrell Experience*



In addition

to these and other advanced features, Western Precipitation Cottrells' are available in CMP (Combination Mechanical-Precipitator) Units, with the world-famous ***Multiclone*** Collectors for the mechanical collection section. These combination units are designed, engineered and installed under one coordinated responsibility by the ***one*** organization that offers unsurpassed experience in both ***mechanical*** and ***electrical*** types of collection equipment -- ***Western Precipitation Corporation!***

REMEMBER—*in the field of dust collection, nothing equals the long life, low maintenance and high collection efficiency of a Cottrell Electrical Precipitator!*

HINTS AND HELPS

(Continued from page 68)

This sometimes happens when handling the media of a heavy gravity separation system, where the finely ground ores are much heavier than sand.

In these plants, operators have found it convenient to install a lubricated plug valve in the line between the tank and the pump with high pressure water lines tapped in on each side of the valve. Then if the line becomes plugged, the valve is closed and the line flushed in either, or both, directions. Rubber lined valves will often prove to be more economical when abrasive materials are pumped.

Flexible hoses give flexible production

THREE OUTLETS on a sand sizer are equipped with flexible hoses so that the operator at this western sand producer can send any part or all of the production to one of three launders below. This permits practically any gradation of sand to be produced, while the unwanted fractions can be wasted.

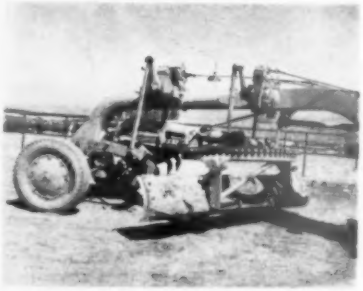
Tires help keep stone in place

MATERIALS ON INCLINED BELT conveyors do not always know their place, as safety conscious producers well know. If large pieces do not have an opportunity to settle into a bed of fine material they sometimes roll back down a conveyor with destructive force or fly off into space.

An eastern rock products producer decided that the best place to lick this problem was at the transfer point, where the stone is put on the conveyor. To do this he mounted rubber-tired wheels on vertical pins along the edge of the belt conveyor. The tires are discarded truck tires, without air in them, which absorb any impact from the crushed stone. The rubber carcasses bear on the edge of the rubber belt with very little friction in the rubber-to-rubber contact, and the wheels turn freely, guiding the rock to the center of the belt.

Results: With heavy stone concentrated in the middle of the belt there is much less tendency to roll backward. With few pieces perched on the edge of the belt, the hazard of material falling off the edge is virtually eliminated. *Courtesy of the National Crushed Stone Association.*

Haulage roads reduce downtime for repairs



THE SAND AND GRAVEL INDUSTRY is one of the largest truckers in the country, handling more than 500 million tons of aggregates at least once. Taking raw materials from pit to plant, from plant to stockpile and from stockpile to market is one of the country's largest hauling jobs.

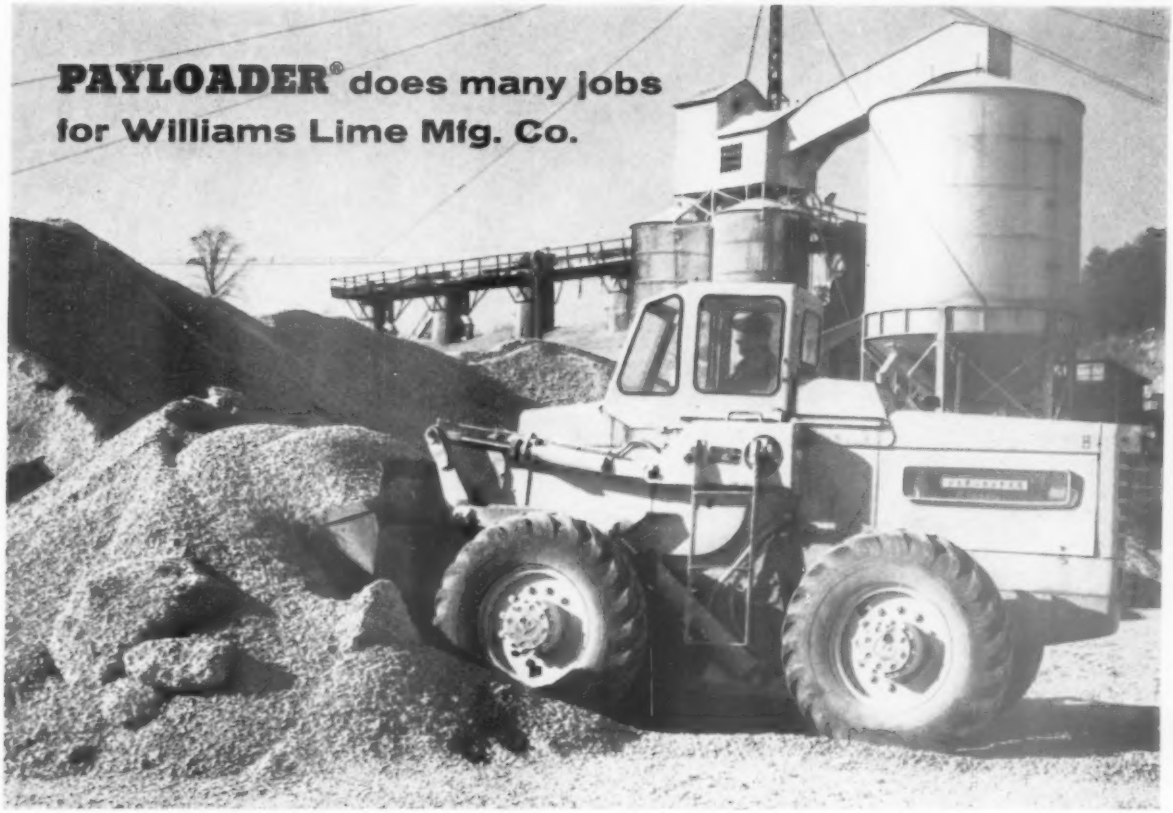
Most producers agree that road maintenance in their plants is a good investment. It pays out in faster transportation of material and quicker round trips for their heavy equipment, but good roads cut machinery maintenance appreciably.

A western producer uses a motor grader to keep his haulage roads in top condition. This machine is equipped with an adjustable angle dozer blade and with a set of scarifier teeth. It is an unusual day when this machine doesn't have a job somewhere in the plant—resurfacing roads, making new traffic lanes, levelling the parking lot or merely keeping the roads free from spillage and loose gravel.

END

Loading machine prevents segregation

WHEN A MIDWESTERN ROCK producer bought this ungainly-looking machine, he was only expecting speed and efficiency to load trucks with crushed stone. An unexpected advantage developed when the mixing action of the gathering screw, the bucket elevator and the distributing belt prevented segregation of sizes. At first, he thought it to be an illusion. Now, a number of county road departments, highway engineers and contractors insist that their trucks be loaded with this machine. He's willing to oblige, of course, but wishes now he had a bigger unit.



"You can't find a better machine than the model HU," according to Baxter C. Kirby, "PAYLOADER" operator for the Williams Lime Mfg. Co. in Knoxville, Tenn. *"It's fast . . . keeps trucks on the go better than any machine I've ever used."*

This is another materials producer that has turned to a 4-wheel-drive "PAYLOADER" tractor-shovel to capitalize on the all-around usefulness and material handling efficiency of these units. Williams' principal use of the 5,000 lb. carry capacity HU is to load out all stockpile material produced by the 50 ton per hour all-electric plant. Other jobs are found for it every day (general plant and stockpile maintenance, car loading, railroad car spotting) where it saves time and keeps plant operation steady.

Like all 4-wheel-drive "PAYLOADER" models, the HU is built to outperform any other tractor-shovel in its size. It features the famous Hough 40° roll-back bucket action at ground level, "no-stop" power-shift transmission, power-transfer differential, planetary final drives, power-steer and 4-wheel power-brakes.

Top performance by "PAYLOADER" tractor-shovels is "no news" to the Williams Company however. The firm also uses three small units (model HA) to good advantage at their lime plants for indoor aggregate handling. There is a "PAYLOADER" size to fit the material handling requirements in *your plant* too . . . 7 models range from 2,000 to 9,000 lbs. carry capacity. Ask your Hough Distributor to show you the difference "PAYLOADER" performance can make in your operation.

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"Our HU 'PAYLOADER' is a very versatile machine, we use it to do everything,"

says Plant Manager L. W. Morgan

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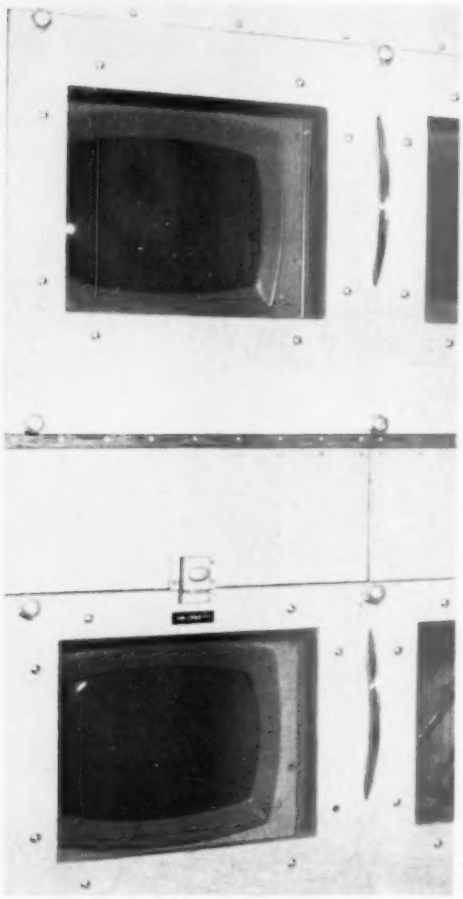
Enter 1025 on Reader Card

Camera above primary crusher monitors dumping operation



One man, 8 TV cameras control cement making from crusher

A SINGLE OPERATOR controls every phase of raw material crushing, screening and storage in a California cement plant, thanks to eight television cameras at strategic points in the operation.

The five-kiln, 17,500 bbl.-per-day Mojave plant of California Portland Cement Co. is the first portland cement plant in the West to use industrial television for this purpose. Although the installation is not the first in the U.S., few surpass it in scope. And TV is just one of the control features at this ultramodern plant.

A sketch of the crushing plant will show the outstanding use made of the TV cameras:

Primary jaw crusher is housed with the secondary gyratory crusher and conveyors in a steel structure as tall as a five-story building. Raw rock is dumped from rear-dump trucks directly into the jaw crusher and flows by gravity into the gyratory crusher. A belt conveyor transports the crushed rock to the impactor building and into a rock box located at the transfer point.

From the rock box, two vibrating feeders feed the material over two primary screens. Oversize falls to two impactors and through-screen material travels by belt conveyor to the raw rock storage building. The product of the impactors is belt-conveyed to two secondary screens located in another building. Finished product from the secondary screens falls onto the belt conveyor fed by the primary screens. Oversize rock is sent back to the impactors, bypassing primary screens.

The impactors and some of the screens are in a separate building from the primary and secondary crushers. High-volume speakers and microphones let the operators communicate with each other.

One man watches several operations from these receivers

to raw storage

By WALTER B. LENHART

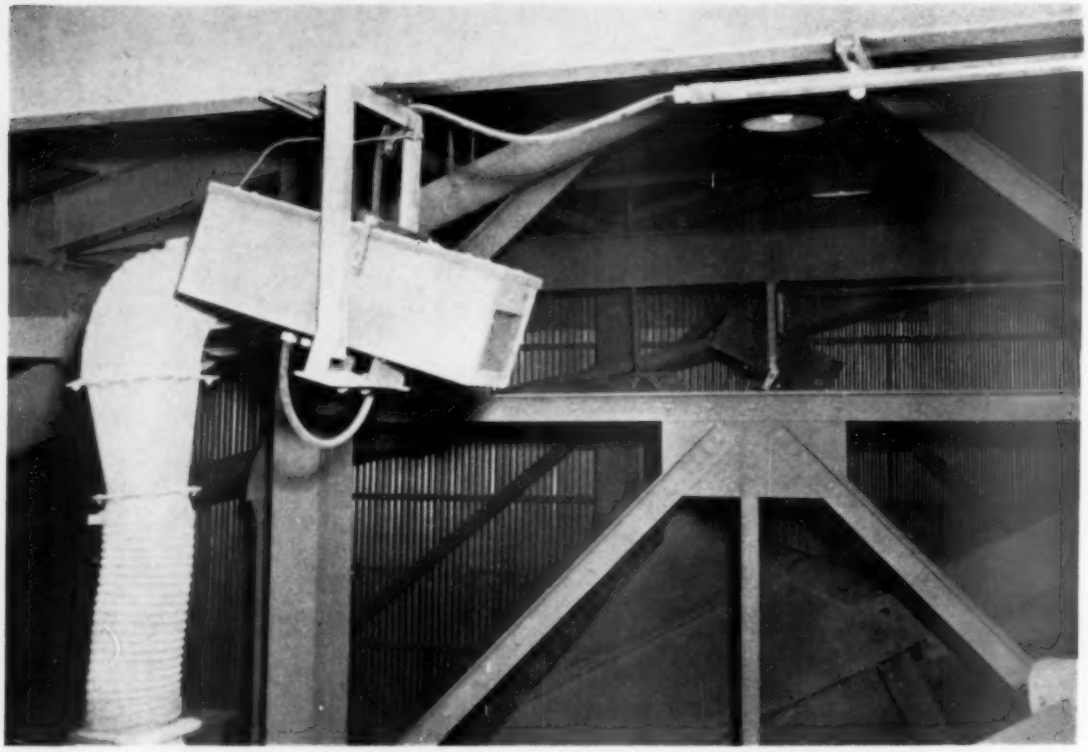
The entire conveying system in the crushing and screening plant has an alarm system which sounds a horn and flashes a light when any piece of equipment stops. To prevent plug-ups, this alarm system shuts down all the equipment behind the stopped machine.

Eight operations are televised:

* Dumping by trucks into jaw crusher
* Feeding of secondary gyratory crusher
* Transfer point from gyratory crusher to belt conveyor
* Transfer point from this belt conveyor to rock box
* Vibrating feeders for primary screens
* Primary screens
* Secondary screens
* Raw rock storage building

At the unloading station at the primary crusher, the one operator controlling all this widely spaced equipment is stationed in an air-conditioned room that houses the bank of seven TV screens and the necessary equipment for switching two cameras to one monitor. From this point the operator also can focus on the whole area with one camera located in the rock storage building. The assembly housing the electronic tubes is air-conditioned by refrigeration to maintain their efficiency and lengthen their useful life.

The TV system is a closed-circuit assembly. The black-and-white, 10 x 12-in. screens can "see" through a surprising amount of dust to produce a good image, especially where the material goes into the rock storage building and where the primary crusher discharges directly to the secondary crusher. Since adequate dust-collecting equipment



Here, two cameras scan screening operation

Cement plant TV *continued . . .*

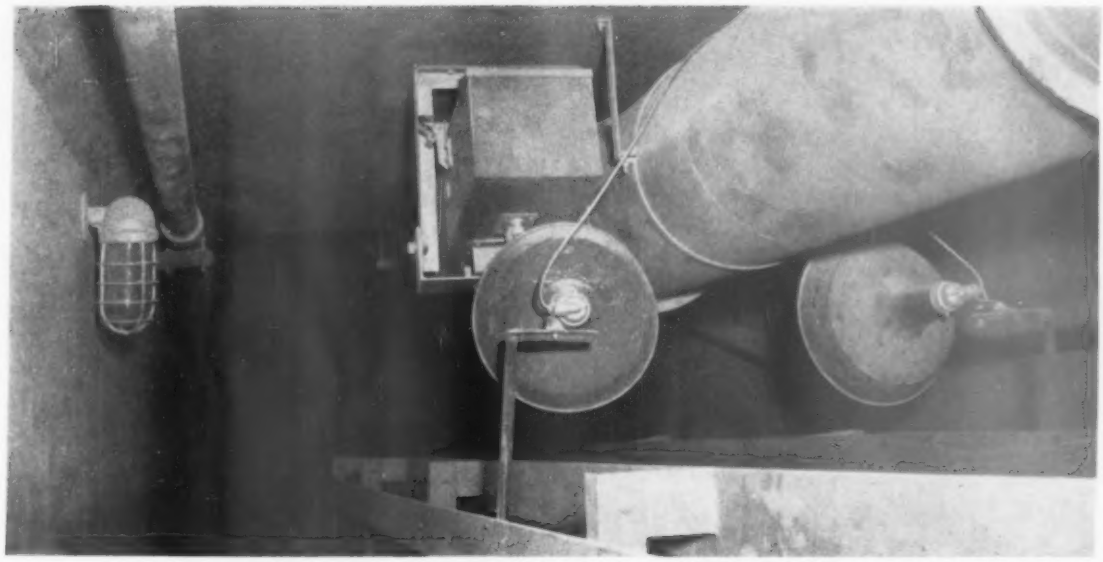
is provided, this dust does not get outside the plant. The lens of each camera is cleaned about once a week.

Other control features of the Mojave plant are designed to insure a uniformly high-quality product. Emphasis has been placed on control of kiln feed, kiln operation, raw and clinker grinding, packhouse, dust, clinker crushing ahead of the grinding and other phases.

Extensive instrumentation, with automatic control and automation of the feed system, enables one burner to operate five kilns. Each of the five 11 x 12 x 350-ft. kilns is equipped with grate coolers and electrostatic dust collectors. The kiln department has an automatically controlled feed system and an almost automatic kiln-operating system. The kilns can be fed from 12 kiln feed silos over two independent feed systems, so that more than one type of clinker can be produced at the same time.

The feed rate, feed system and type of raw mix are preselected on a master control panel. Electronic impulse devices, located in each kiln-feed bin, then call the selected raw mix feeders and keep the material level constant in these bins at predetermined averages. The kiln-feed system also has a zero speed alarm and interlocking sequence relay system. When any element stops because of electrical or mechanical failure, the system shuts itself down and the alarm sounds.

Each kiln has a control board and an audio-visual alarm for all machinery, including the feed system. The kiln control proper consists of the following: Burning zone temperature recorder; automatic fuel flow control; automatic fire control, depending on the mix temperature in the calcining zone; automatic oxygen control; automatic draft control; automatic kiln end-housing temperature control; automatic precipitator temperature control with override and fuel cut-off; kiln end temperature recorder; automatic cooler speed control based on undergrate pressure; cooler temperature recorder; automatic kiln hood draft control; three-point speed indicator for kiln speed, kiln feeder speed and cooler speed; pressure indicator for grate cooler with four-point indicating.



Camera and lights are aimed at conveyor beneath secondary crusher

Several instruments have an alarm contact which is connected to the audio-visual part of the board to show the operator which instrument is below or above operating range. In case of a power failure, the fuel flow is cut to a pilot flame to prevent severe damage. When power service is restored, the fuel flow remains at pilot flame as long as the temperature of the kiln end housing or the precipitator is above safe operating range.

Air coolers are provided on the kiln floor to improve working conditions for the operators. Mojave, being in the desert, has very high summer temperatures; so air-cooling of the kiln floor is a real aid to better operations.

Console permits selective bulk loading from any of 36 silos

A central mill control board installed in the mill building enables the operator to see the performance of all the mills at once. This automatic mill-control system keeps each grinding mill properly loaded at any given time, and it is a sure indication of mill conditions. When the recorder-controller needle cannot stay at a control point without great fluctuations, separator or ball load is out of range. All moving elements in the mill building have zero speed switches to signal electrical or mechanical failure.

The clinker-crusher operation is controlled automatically by electronic signals located inside the crushed-clinker storage (mill feed) bins. A gyratory crusher is used to precrush the clinker before it is fed to the bins. From these bins it is withdrawn over weighing equipment used to proportion gypsum and clinker before the materials reach the mill feed bins.

The mill bins are kept filled at a proper level by a system similar to the kiln-feed system. Each of the ten 10½ x 17-ft. mills has an automatically controlled weigh-feeder. To keep the mill at its optimum performance at all times, two air separators are continuously balanced, and proportional feed rate increase or decrease is maintained.

This was achieved by feeding the potential current and the actual current consumed from each separator into two thermal converters. The thermal converters change these values into a millivolt output which is then fed into two instruments. One instrument is used to divide the mill stream equally between the separators, and the other instrument controls the speed of the weigh-feeder. Proportional band, rate and reset are required on each instrument to keep the total mill load at an optimum control point at a desired fineness of the finished product.

One mill can be used for either raw or finish

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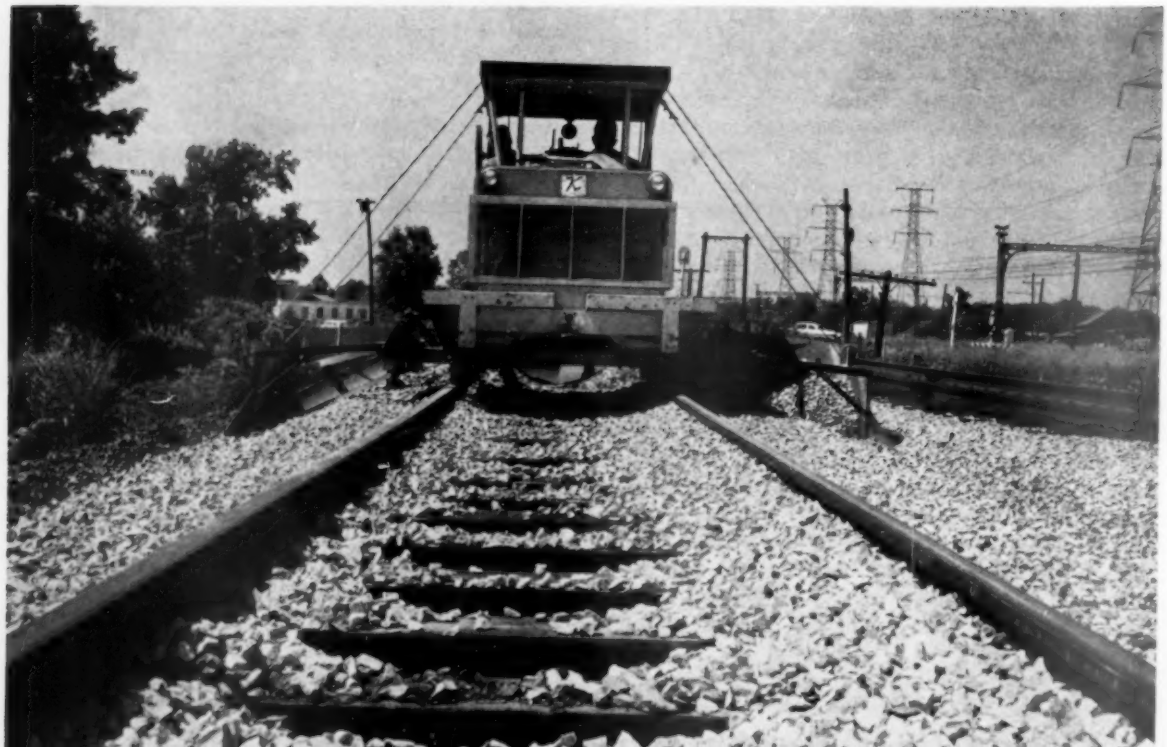
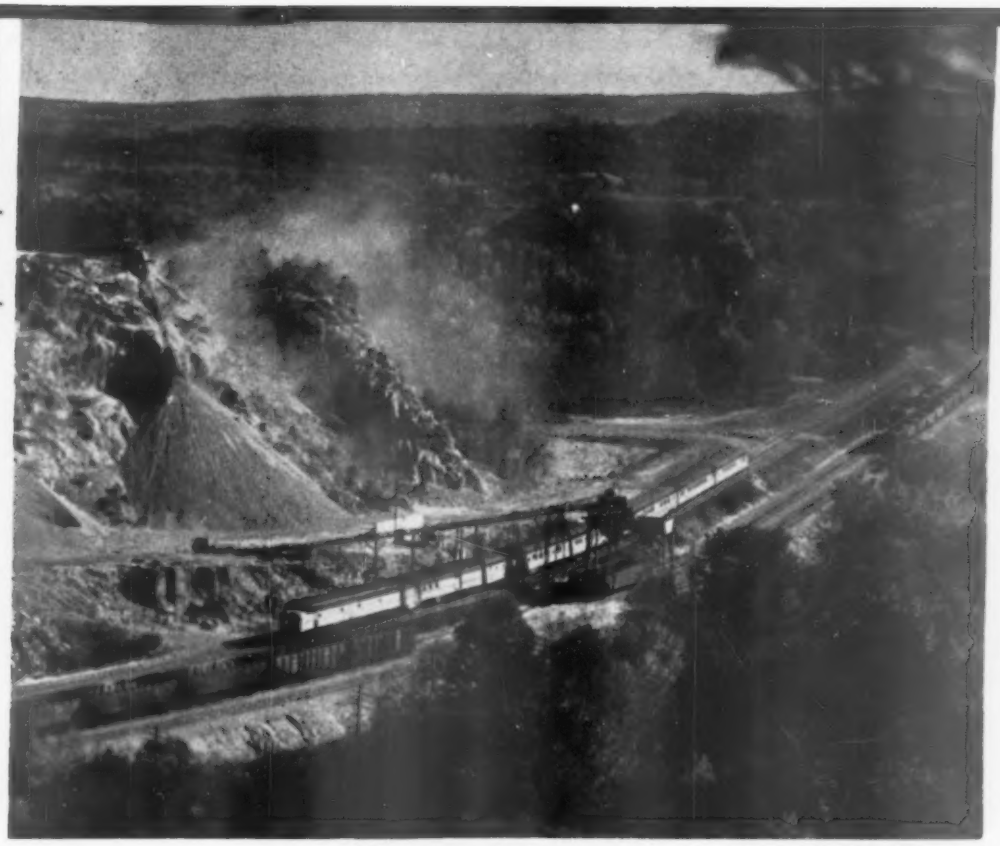
Quartzite: tough and expensive . . .

. . . but hard to beat for





During warm months 40 cars per day are loaded with ballast from the plant

railroad ballast

By ELWOOD MESCHTER

NEW MANAGEMENT of the Chicago-based giant Chicago and North Western Railway System started its modernization program right at the bottom—substituting durable Wisconsin quartzite ballast in the roadbed for softer, less rugged gravel and limestone. A new quarry on its mainline at Rock Springs, Wis. produces 350 tph. of ballast stone used to make a completely new roadbed on the sprawling 10,000 miles of mainline track.

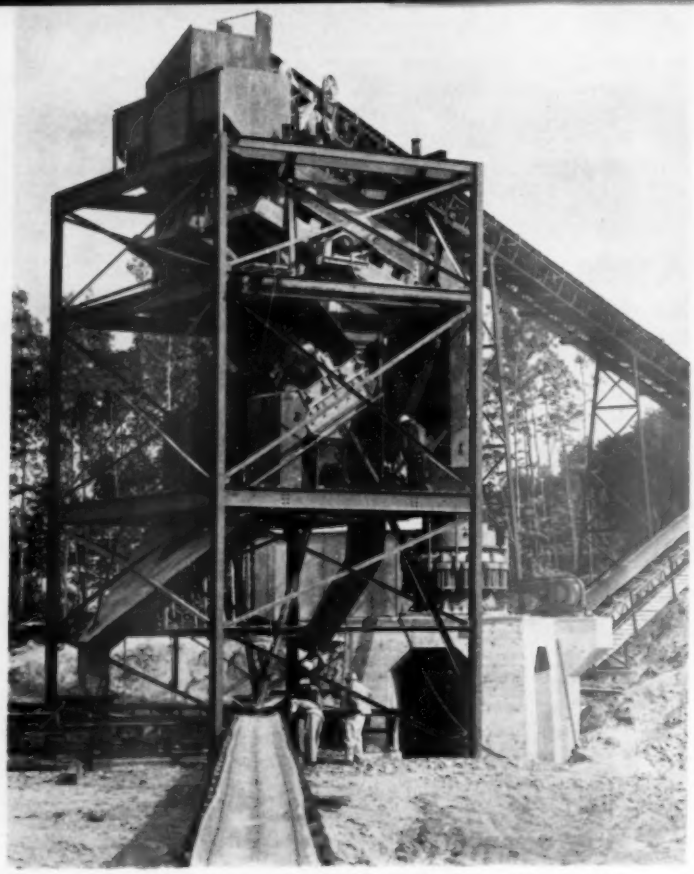
The choice of quartzite was no accident. Teams of engineers and geologists studied hundreds of materials in North Western's territory before concluding that hard, sharp quartzite would make the best ballast. After the first cost of replacing existing ballast had been invested, sharply reduced maintenance expenses would soon offset the high production cost for quartzite.

Quartzite stands up under the heavy pounding of fast freight trains. Its sharp edges and rough faces knit together, forming a compact, dense bed which does not work out of the ties under heavy loads. The roadbed ballasted with quartzite is "clean," and stays that way. When the stone does break, it seldom disintegrates into dust; instead, it forms smaller pieces of the same shape with the same sharp edges and rough faces. Draining well, the ballast does not become choked with dust and rarely needs the expensive cleaning which keeps track maintenance for most railroads at astronomical levels.

The very qualities which make quartzite ideal for ballast make it difficult and expensive to produce. Foley Bros. of St. Paul, Minn., contract operators of the quarry for the North Western, have found that the abrasive rock wears out equipment with startling and devastating rapidity. Most of the 22 men required to operate the quarry and processing plant work continuously on maintenance and repair. Their work is not made easier by the need to wear masks continuously in the fine, abrasive silica dust.

Drilling is slow and difficult in the vertical seams

Big 11-in. drill pierces rock to 85 ft.



Primary screen and crusher are at right. Tower at left yields large and fine ballast and fines

Quartzite ballast *continued . . .*

of tough, dense rock. A churn drill with a 650-lb. bit at the end of a 4,200-lb. stem pounds an 11 in. diam. hole at the rate of 5 to 7 ft. per hour. But this rate depends on how well the bit stands up. Normally a bit can make between 5 and 10 ft. of hole before it is changed; but it is not unusual for the bit to pound to a pulp while putting down only 12 in. of hole. Two men work an 11-hr. day reforging and sharpening bits.

Blast holes are drilled 85 ft. deep to make an 80-ft. quarry face. Blasting is done every 2 to 3 weeks, when 7 or 8 holes have been drilled, and each blast brings down about 50,000 tons of quartzite. Ammonium nitrate is used in each hole, set off with 40 percent gelatin in the bottom. This gives excellent results in the hard rock, but some heavy slabs are broken from fissured vertical seams in the formation. All slabs or blocks too large for the crusher are broken with a drop ball. A 2½-cu. yd. shovel loads out a pair of 22-ton end dump trucks for the short haul to the primary crusher. A third unit is always kept as a standby for this rugged service.

Two conveyors load cars from piles of large and small ballast

The raw, rust colored rock is tough on the primary jaw crusher. This is a 60 x 48-in. unit which reduces quarry-run material to minus 6 in. at the rate of 300 tph. After a day's operation, it takes a welder 10 to 11 hrs. to rebuild the surfaces of the manganese steel jaws with hardsurfacing metal. The quarry operators have found it to be more economical to use the wearing parts of screens, crushers and dippers to destruction rather than to rework them with hardfacing materials.

The primary jaw crusher is fed with a 5 x 18-ft. heavy duty manganese steel apron feeder, under the surge hopper, which takes the impact of rock dumped from the trucks. An operator in the control room over the crusher observes the flow of material into the crusher and stops the feeder if the crusher shows signs of jamming.

The sharp, heavy rock is also hard on belt conveyors. The designers of the new plant took pains to reduce cutting and bruising of the valuable long inclined belt from the jaw crusher to the primary screen tower. A wide, short, slow moving belt conveyor moves the crushed rock from under the crusher to the incline belt. This short collector belt is expendable—after it has been worn to destruction by impact and abrasion it is quickly and easily replaced. It reduces surges of fine material which might flood the longer belt and at the same time it accelerates the flow of material to the faster belt conveyor. A grid of heavy steel bars is an added protection to the carcass of the inclined belt conveyor. This grid catches oversize rock as it drops off the short belt, letting it slide slowly from the short belt to the long belt. Fines drop through the grid to form a deep bed of material, cushioning the fall of sharp oversize.

Abrasion takes its toll on screens, for most screen plates and cloths last scarcely 3 weeks. Paul Kistler, Foley Bros'. superintendent of the operation, is trying several types and styles of screen plate in an effort to find a material which will last longer. With this short service life, every small increase in durability will make a big dent in his heavy maintenance expenses.

The primary screen is a 5 x 12-ft. rod-deck vibrating screen which scalps off plus 1¾-in. stone and drops it to a 20-in. gyratory crusher. Through-screen material drops to a long inclined belt conveyor for the trip to the top of the secondary screening tower. These fines form a bed of material which protect the belt from the impact of the crushed rock discharging from the gyratory crusher to the fast moving belt conveyor.

Two ballast products are made. Heavy ballast for mainline and heavy traffic is 1¾ x ⅜ in. Stone for secondary track and sidings is ⅜ x No. 16, the minus No. 16 being wasted to a stockpile,

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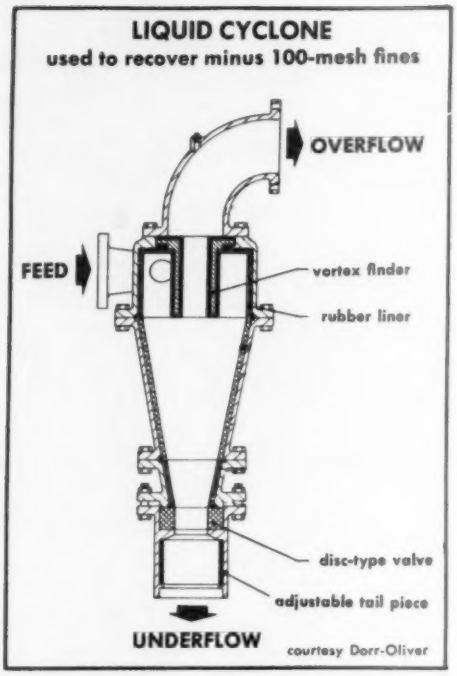
Two single-screw classifiers wash and deslime sand



Aggregates Washing III

Sand washing,

Part I of this series (Aug., 1958, p. 74) discussed why aggregate washing is necessary. Part II (Oct., 1958, p. 92) explored the techniques of gravel washing

By W. A. RUNDQUIST

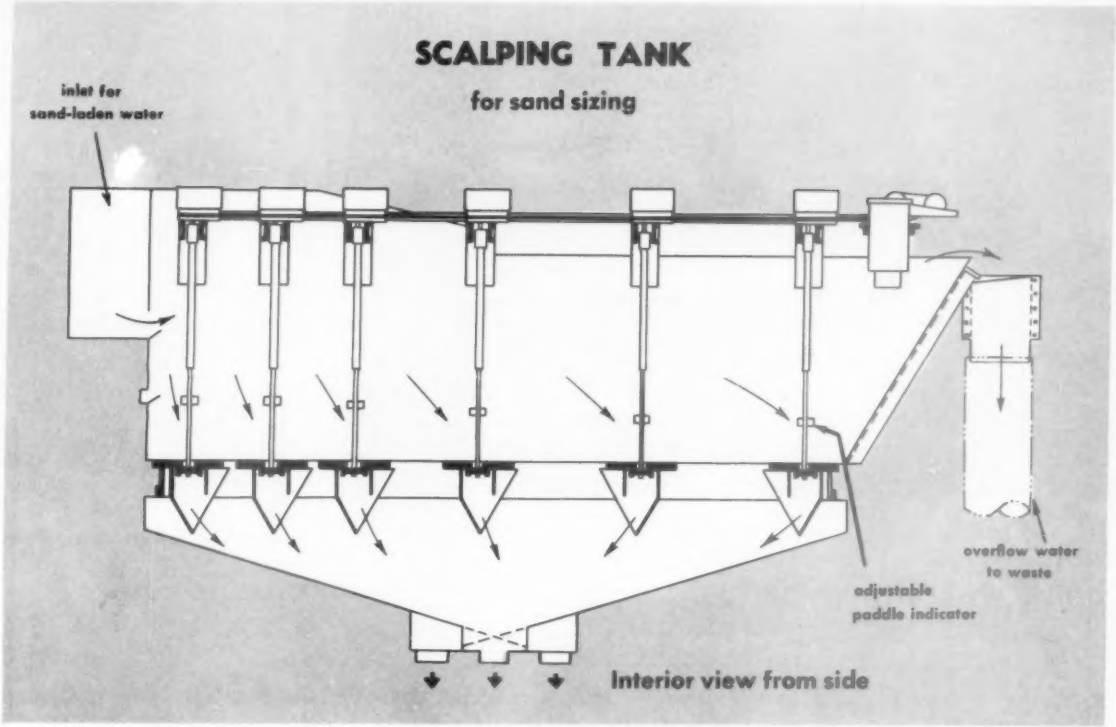
CLEANNESS AND GRADATION OF FINES used in aggregates for construction projects have both received much closer attention in recent years. As a result, the processing of aggregates has become an art requiring more technical know-how and more precise methods than usually associated with the mere washing of gravel and rock.

Material from ¼-in. down—generally called sand—is washed to remove dirt and silt. Water is also used to size sand and to classify it or separate it into the proper particle designation. Then the product is usually dewatered.

Sand screening. The treatment of fines differs from the processing of coarse aggregates. Fine screening on less than No. 8 mesh is usually impracticable. The area of dry-screening surface required to separate fine materials is usually too great because of the small amount of material passing through per square foot. And from 3/16 in. down to fines approaching 200 mesh, wet screening also has to be ruled out. In the smaller mesh sizes the water itself does not readily pass through the small openings between the wires, but washes over screen, carrying much of the fine material with it.

This is aggravated by the fact that when coarse materials are washed, product in the minus ¼-in. size range is apt to be lost in too great quantities. This requires a split at ¼ in., using hydraulic separation for everything from ¼ in. down for best gradation.

If the coarse aggregate does not require washing and the sands do, the answer is dry screening on the ¼ x ⅛-in. split and hydraulic separation on only the minus ⅛-in. product. However, circum-



classifying equipment

Which type is best—for you?

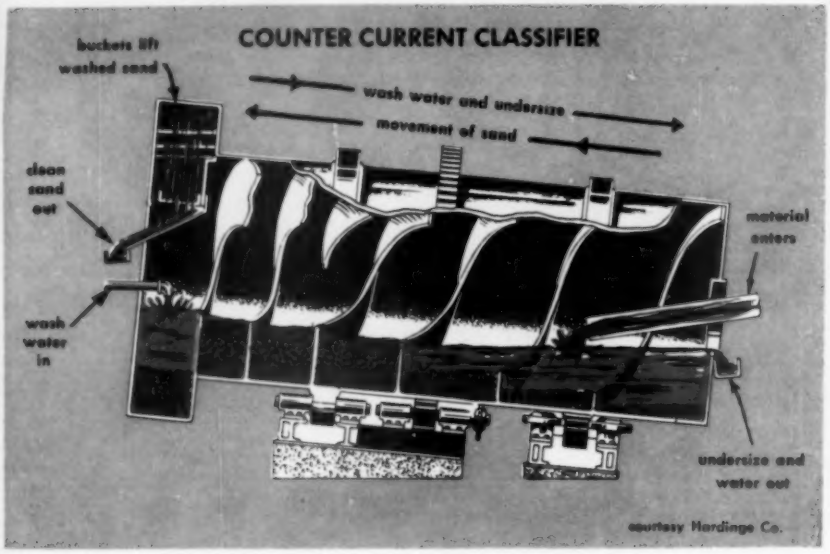
stances and plant setup may call for wet screening of the material above No. 8.

That is the situation today as regards screening of sand. Fines down to ⅛ in. can sometimes be sized with screens, but often hydraulic classification is necessary. And hydraulic classification is always required for sand smaller than ⅛ in.

What about hydraulic classifying methods? Both hydraulic separation and hydraulic classifying are practiced today. **Hydraulic separation** is employed to remove unsound, lightweight particles and minus 200-mesh fines from the sand to be retained. The process relies on the relative buoyancies (floating characteristics) of the grains, and their rates of settling in water under specific conditions of water flow and turbulence. Hydraulic separation uses either water or a "heavy medium."

Where water is used, the light and smallest particles in the flow of fines entering the separator will settle first, because they have less relative buoyancy. Where a heavy liquid medium is used, as in the heavy media separator, the liquid is carefully chosen to have a specific gravity (density) between the dense particles to be kept, and the lighter particles to be wasted. Because of this, the light material floats on the dense liquid medium, and is thus separated from the sound material, which sinks.

And how does the **hydraulic classifier** differ? In this process, several sizes of sand of equal specific gravity can be separated. Thus the hydraulic classifier is used where sand sizes must be blended to meet specifications. In both hydraulic separation and classification a great deal of water, carefully controlled, is used.



Sand drag removes slime, water

Sand washing *continued . . .*

In any hydraulic classification of sand using water as the medium, the amount of fines retained with the final product depends on 1) the area of the settling basin, 2) the amount of water used and 3) the extent of turbulence created in the settling area.

Since the area of the settling basin is generally fixed, the quantity and size of fines to be wasted must be regulated by changing the second and third factors.

The more common types of equipment available for washing, classifying and sizing sand are the next thing to consider.

Fine material screws, often called classifiers, have been popular for many years for cleaning sand and separating out slimes, dirt and small fines. The product of one of these screws will be, of course, a single aggregate ranging in size from the largest feed to cut-off point of fines removal.

A fines screw has a single or twin-screw flight running lengthwise in a tilted tub. The lower end of the tub is flared out to provide adequate area for settling of the fines to be retained. Around the top of the two sides and end of the flared portion of the tub are adjustable weirs that are used to regulate the overflow, which is collected in a flume running around this area.

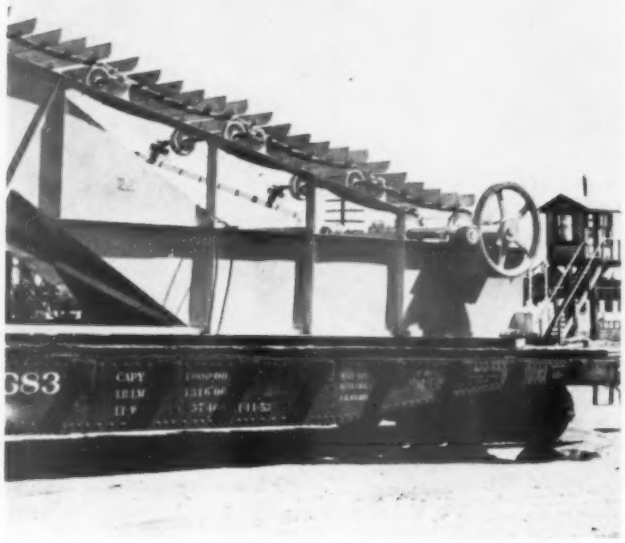
The screw flights work the material up the inclined portion of the tub, discharging through an opening at the upper end. The moisture content of the sand product will depend upon the length of the tub above the water level. The longer the screw, the lower the moisture content. Screw-type classifiers will deliver a product retaining from 10 to 15 percent moisture, depending on the relation between tub length and effective screw diameter. Furthermore, the moisture content depends somewhat upon the minimum size of fines to be retained in the product. Usually moisture content data are based on an average sand size with retention of a minimum of minus 100-mesh size. The percentage of fines smaller than 100 mesh can be increased by one or a combination of the following adjustments:

* Reduce speed of the screw.
* Reduce the volume of water entering the box by the bottom inlet.
* Set the three overflow weirs to the same height and level.

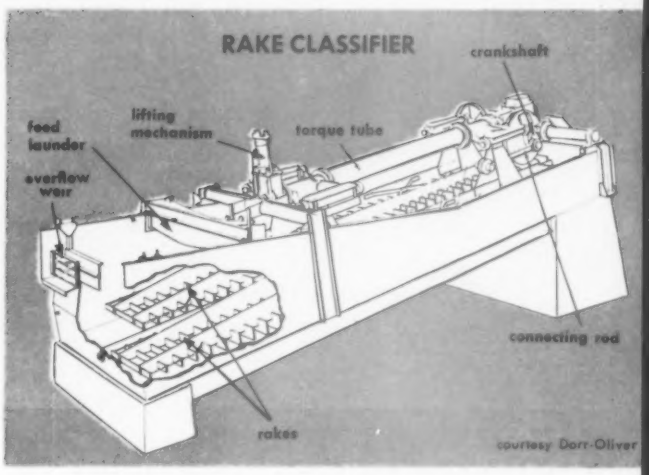
Reducing the speed of the screw reduces turbulence, which permits more of the extremely fine particles to settle. The capacity of the screw in quantity of product per hour is decreased in direct proportion to the percentage reduction in speed. This factor must be considered in determining the size of unit needed to handle the desired capacity of any given size range of product.

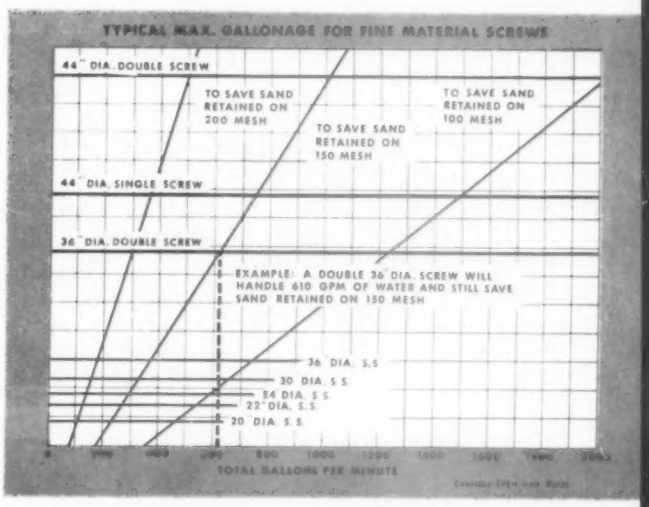
The amount of water is another factor influencing the degree to which a specified size of sand is retained in the product. More water will be required to retain down to 100-mesh fines only, than to retain 200-mesh.

Auxiliary water is usually supplied to the tub through a valved inlet at the bottom of the lower end. In most screw classifiers there is a perforated



Rogers Iron Works photo





false bottom through which the water must flow, causing a rising-current effect to assist in the sizing. The amount of water can be controlled by regulating the valve on the inlet pipe.

Further control of fines retention is accomplished by adjustment of the weirplates to regulate the depth and rate of overflow. When all plates are at an equal height and level, more fines can be retained. When one or two are lowered, the overflow at the lower level is speeded up and more fines are carried away.

The counter-current classifier is another type of equipment for classifying materials, usually of fine particle sizes, into a single product. Basically designed for classifying finer top-size materials, it is frequently used in conjunction with a ball mill or rod mill in the processing of manufactured sand.

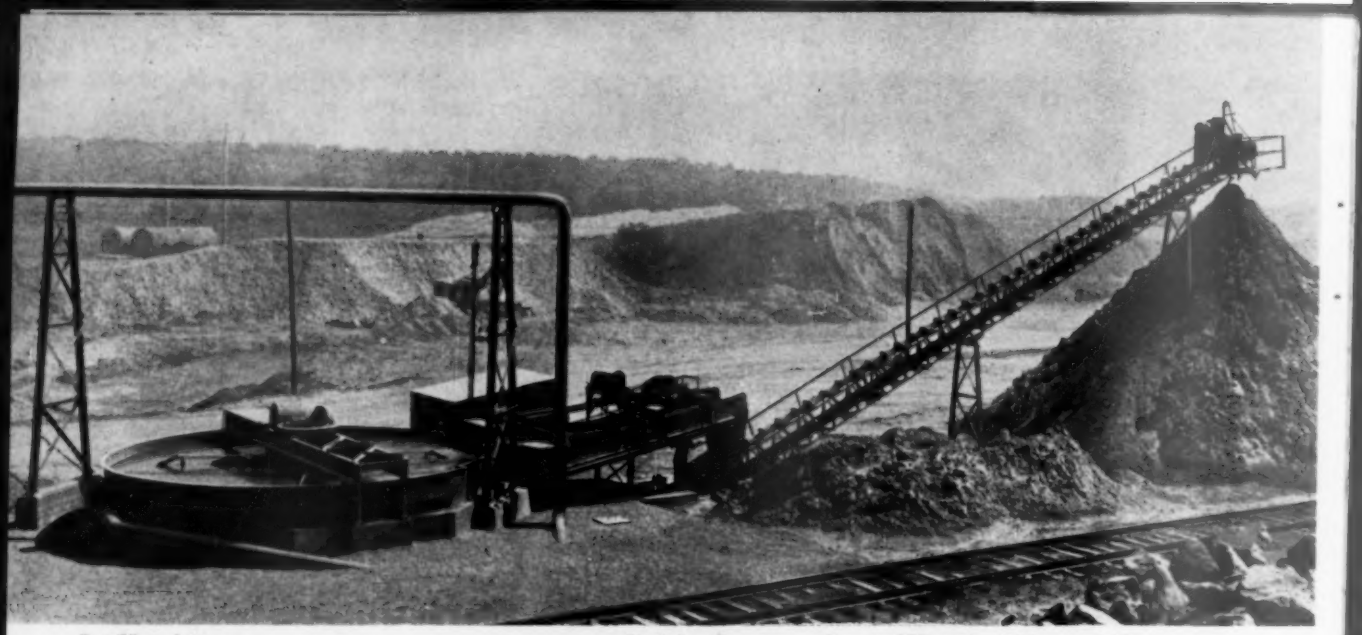
It consists of an inclined, slowly rotating cylindrical drum with continuous spiral flights attached to the shell interior. These flights form helical troughs, by means of which the settled material is moved to the upper end for discharge. The lower end of the drum is closed except for a central circular overflow opening. At the upper end is an elevator that discharges sand in a fairly dewatered state.

The sand drag is another classifying device, more popular a few years back and still applicable where large quantities of water have to be handled —for example, when producing material dredged from a river bed or lake. While a sand drag, sometimes called a settling tank drag, does a satisfactory job of washing and classifying a single product, it is large and bulky for the amount of dewatered sand it will deliver per hour.

As its name implies, the sand drag has a continuous series of flights secured to a pair of chains. These flights drag through the settled sand near the bottom of the tank, discharging the material at the top of the inclined portion of the tub, as

TYPICAL SPECIFICATIONS
SINGLE AND DOUBLE SCREW FINE MATERIAL WASHER-CLASSIFIER

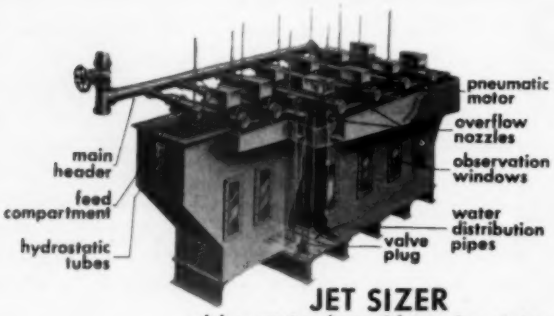
	Single			Double	
Screw diameter	20"	30"	44"	36"	44"
Tub length—feet	22	22	32	22	32
Capacity—tons per hour	35	80	175	250	350
Maximum material size	3/8"	3/8"	3/8"	3/8"	3/8"
Hp. (normal) Req. (electric)	5	10	25	25	50
Water req. (gpm. at 25 psi.)	30-210	30-260	30-650	40-600	40-950
Screw Speed—rpm. (normal)	38	26	17	21	17



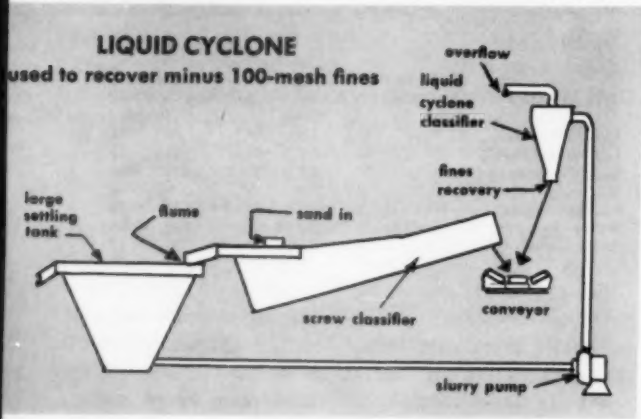
Dorr-Oliver photo

Bowl classifier recovers fines to 325 mesh, which are salable as agstone

Sand washing *continued . . .*



JET SIZER
rising water-jets aid precise sizing
courtesy Dorr-Oliver



in the screw classifier. The flights create some turbulence to wash out fines and silt, and the rate of overflow is regulated by a weirplate at the lower end of the tub.

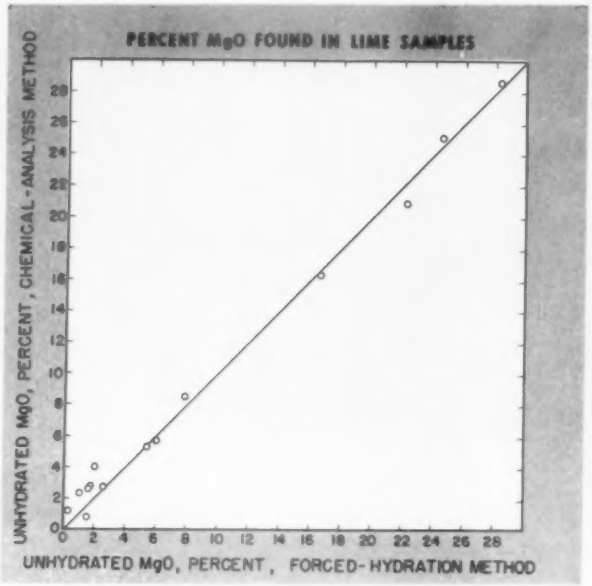
Here again, the degree to which the sand is dewatered depends on the speed of operation and the length of the incline above the water line.

The rake-type classifier has a series of flights attached to supporting members to form rakes (usually two) which are actuated to "rake" the fines up a slope and out of the liquid, discharging them at the upper end as in a screw classifier. The rakes are mechanically lifted for the return stroke. They operate in a reciprocal motion, 180 deg. apart. Lifting on the return stroke is accomplished by a rocker arm motion imparted to the crankshaft assembly. Sometimes four rakes are combined in a large unit, which may even have a bowl-type tank. The normal tank, however, is similar to that of a log washer, with an overflow weir at the lower end.

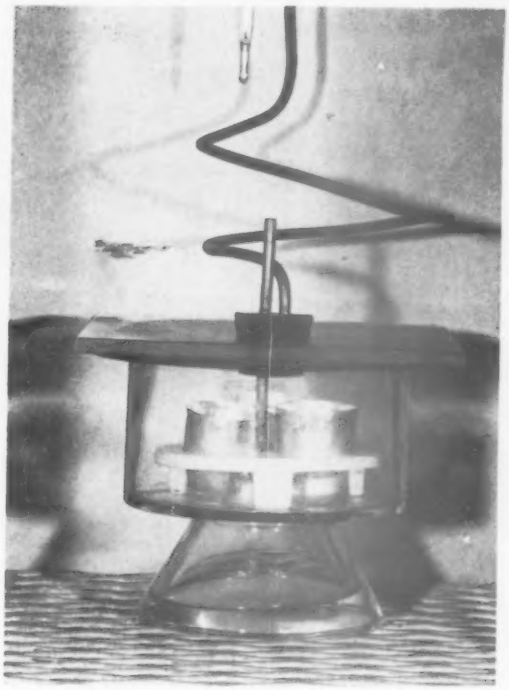
Multiple sizing of sand, with provision for blending back to obtain the gradations required, is called for by many material specifications written today. Where pit material does not contain all the necessary sizes, they have to be manufactured. In either case, accepted procedure is to screen through the fine material from which the sand specifications will be obtained and then to run this material into a water scalping tank, classifying tank or sizer for multiple separation by grain sizes or particle specific gravity.

In their simplest form these tanks are merely

Please turn to page 126



Graph shows that the quick and longer methods of finding unhydrated MgO in lime sample give same results. This establishes the validity of the new test



To get an accurate measure of water added to MgO, lime must be equally dry before and after test. Dry CO_2-free air is passed over lime in jar to dry it

Here's a quick, easy way to find

Unhydrated MgO content in hydrated lime

*By WILLIAM R. TILLEY**

A RAPID METHOD FOR DETERMINING UNHYDRATED MAGNESIA, MgO, in dolomitic lime hydrate was developed by E. Trattner of the National Bureau of Standards concreting materials laboratory. Lime is treated with high-pressure steam, resulting in complete hydration of the residual free MgO. The weight gain resulting from the forced hydration is taken as a measure of the unhydrated MgO in the sample. This method gives results which are reproducible and which agree well with those obtained by the costly and time-consuming chemical-analysis method previously required.

Hydrated lime produced in this country is either a high-calcium type which consists almost entirely of calcium hydroxide, or a dolomitic type which contains varying large proportions of magnesium hydroxide and magnesia. Since 1937, a series of investigations by the bureau have indicated that certain types of whitecoat and plaster failures were caused by the presence of large amounts of unhydrated MgO in the dolomitic lime hydrate. A limit on the unhydrated oxide in hydrated limes was suggested by the bureau and subsequently included in a specification by the American Society for Testing Materials.

A method for the determination of free MgO which does not involve detailed chemical analysis was needed. Prospective purchasers of structural lime with no interest in its chemical composition aside from its unhydrated oxide content need a rapid and inexpensive test. Such a test should also be of great help in day-to-day control in lime plants.

The standard chemical method for determining the unhydrated oxide content of hydrated lime depends on the assumption that the CaO is completely hydrated and the MgO only partially hydrated. The total amount of water determined in the analysis is sufficient to hydrate all the CaO and

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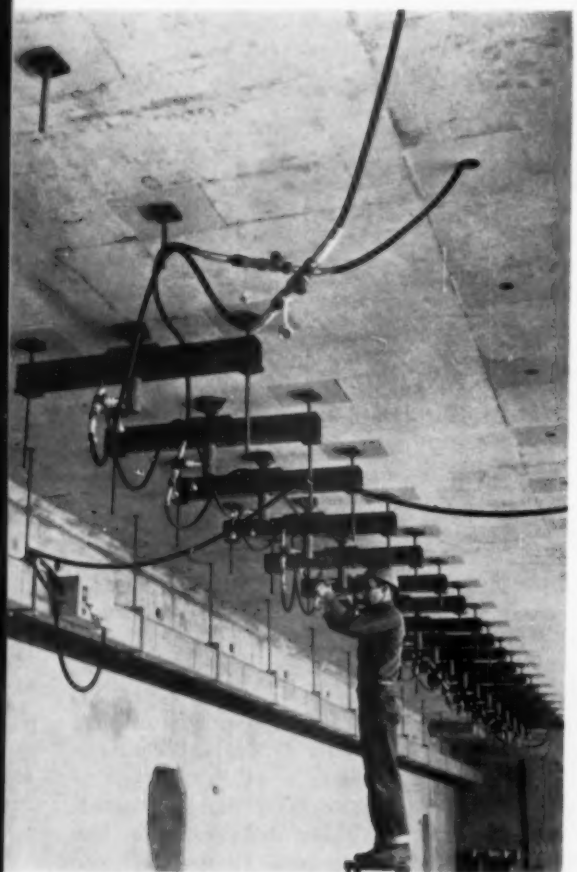
**Chief, Office of Technical Information, National Bureau of Standards, U. S. Department of Commerce*

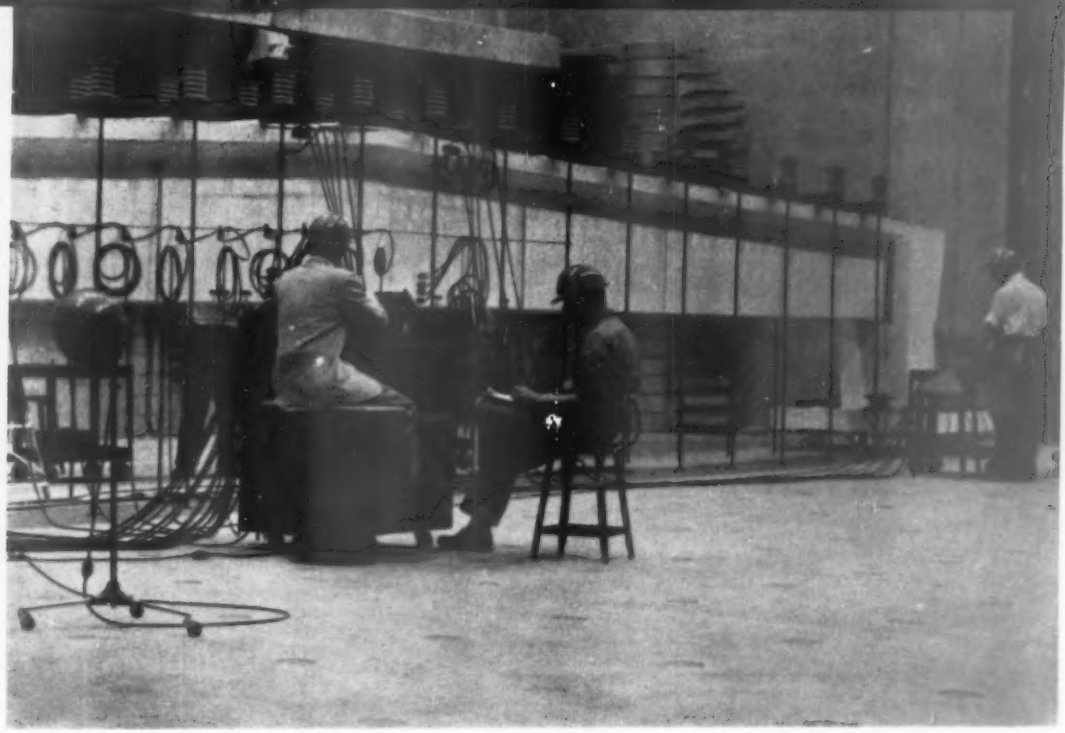
This 60-ft. girder is tested by using jacks under floor. Member failed at 360,000 lb.

PCA shows off new structural and fire test labs



Each small jack, attached to two rods, can push to 50 tons

New lab building is all precast concrete above first floor



THE PORTLAND CEMENT ASSOCIATION, in September, unveiled two ambitious new additions to its research and development center in Skokie, Illinois—a Structural Development Laboratory and a special research center for conducting fire tests. These two buildings are the nucleus of a $3 million expansion of the PCA research facilities nearing completion.

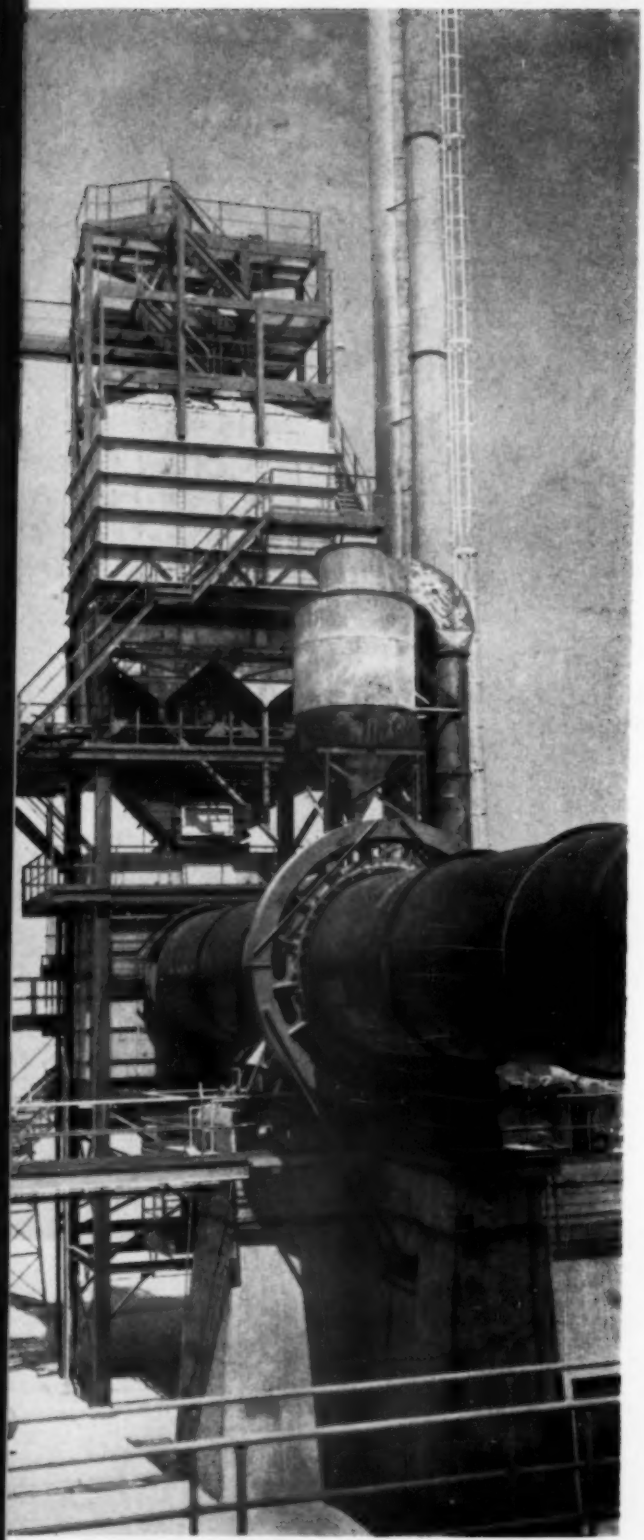
The Structural Laboratory—now in operation—can handle test loads up to 10 million lb., making it the largest facility of its kind in the world. The floor of the laboratory building—designed to simulate the strongest bridge—is perforated with holes 3 ft. apart. Steel rods, attached to hydraulic jacks in the basement and extended through the holes in the massive floor, can exert loads of any desirable nature or intensity on test beams or slabs, mounted on the main floor. First tests in the new Structural building involve concrete shell roofs and methods of connecting precast concrete units.

The Fire Research Center, which won't be ready for operation for several months, is equipped with an array of huge furnaces in which full-size concrete beams, slabs and structural members can be tested for fire resistance. One of the primary pieces of research required in this area is an immediate exploration of the fire-resistant qualities of prestressed concrete structural members.

The two new laboratory buildings add some 58,000 sq. ft. of laboratory space to the 103,400 sq. ft. previously available at Skokie. The overall research facilities have been designed to handle every test of concrete for which the PCA scientists could imagine a future need. END

T-section, supported at three points, is caught at moment of failure

Preheater and contact cooler boost lime plant efficiency



Stone-storage bin, preheater are in tower above kiln's feed end

IMMEDIATELY AFTER ACQUIRING United States Lime Products Corp. in 1956, giant aggressive Flintkote Co. embarked on a $2 million program to make lime at Apex, Nevada. The two new gas-fired rotary kilns there will make about 400 tpd. from the quarry's high calcium limestone. This stone was formerly shipped to the company's other lime plants at Sloan or Henderson, Nev., or to steel mills and sugar factories in the West.

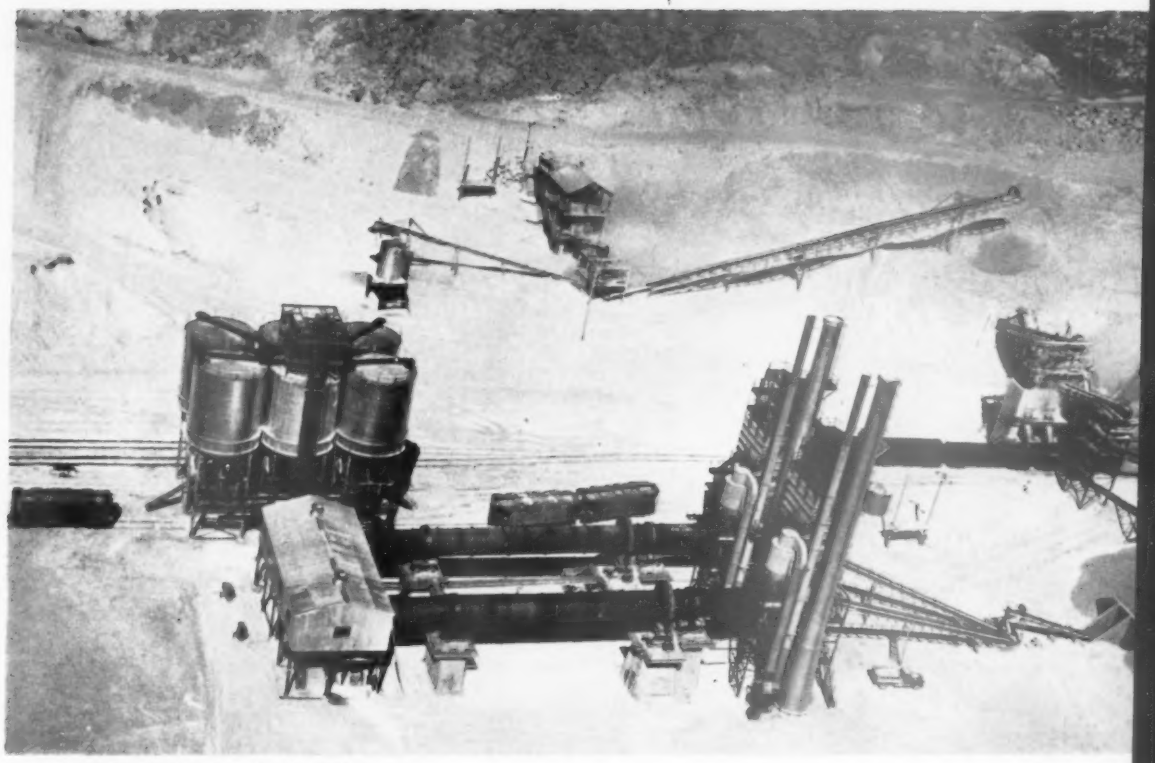
The rock at Apex is a gray-black micro-crystalline limestone which analyzes 98.8 percent calcium carbonate. A strong stone, it does not disintegrate readily when calcined in a rotary kiln. The finished product is very active chemically and slacks almost immediately. It averages better than 94 percent available CaO.

High thermal efficiency was built into the plant, which calcines only one size of limestone—1¾ x ½ in. Each of the kilns has a design rating of 200 tons a day.

Thermal efficiency of the system is improved with a stone preheater which produces about 8 to 9 percent calcination before the stone reaches the kiln. The preheater is a rectangular steel box, the lower half of the raw stone storage bin above each kiln. Exhaust gas from the kiln, between 1,550 and 1,800 deg. F., is drawn through the bottom of this chamber, up through the stone, out through a cyclone dust collector by an exhaust fan. This unit is on the ground and discharges 600 deg. F. gas to the atmosphere through a tall stack.

Safety of the preheater operation is assured by automatic controls. Any buildup of temperature or pressure in the preheater is sensed by these controls which open a bypass gate below the preheater. The stream of exhaust gases is then diverted directly from the kiln to a separate brick-lined stack—completely bypassing the preheater, dust collector, exhaust fan and stack.

Preheated and partly calcined stone is withdrawn from the heating chamber to the kiln with



Process flow in plant is clockwise from top

an ingenious feeding device—a reciprocating bar feeder. A set of five bars in the bottom covers slots in the top of the kiln feed hopper. These bars are bolted to a pair of parallel crank rods on the outside of the bin. As the assembly is moved back and forth by the action of the cranks, each stroke moves a small amount of stone from the bottom of the preheater into the slots. This maintains a steady flow of material into the kiln.

Raw stone flows by gravity from the storage bin above the preheater as the reciprocating feeder withdraws heated stone to the kiln. The resistance of the cold raw stone and a covered top on the storage bin prevents leakage of outside air into the system or loss of hot gas through the storage bin above the preheater.

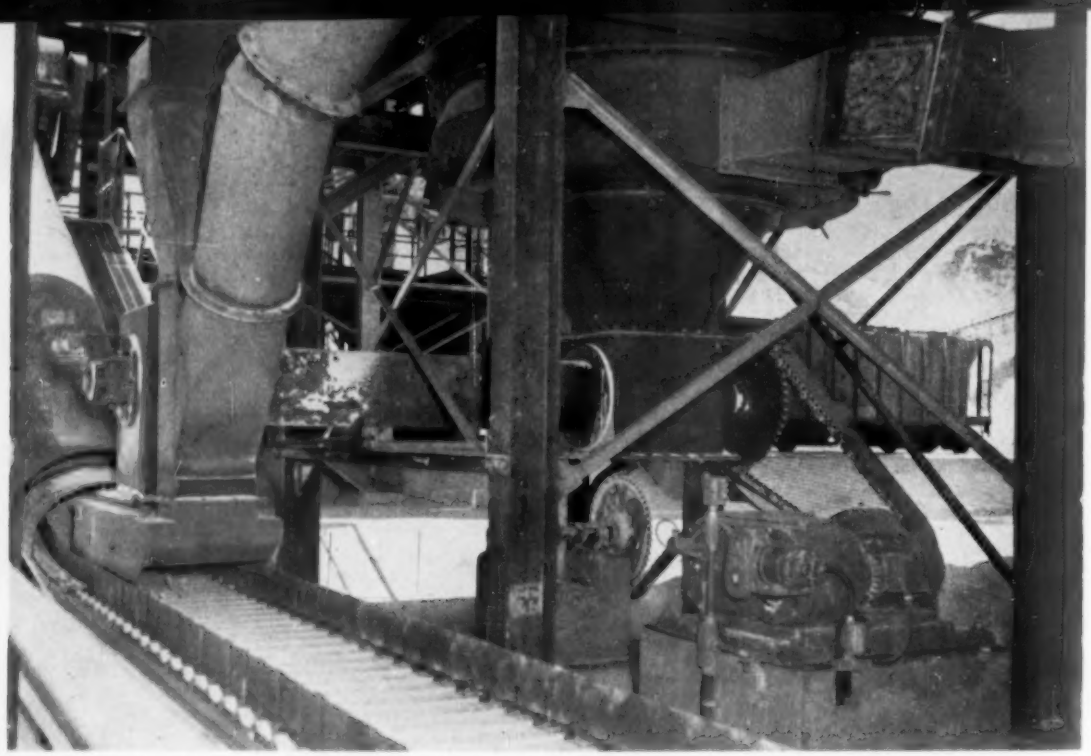
The kilns were designed for maximum efficiency. Each kiln is 10 x 150 ft., mounted on two tires and turning about 40 rph. Brickwork at the feed end of each kiln is built up to restrict the opening to about 4½ ft. diam. The firing end of each kiln has brickwork built up to form a chamber about 35 ft. long, a "soaking" chamber just ahead of the gas burners. Natural gas is brought to the plant with a 12-mi. extension of a 12-in. pipeline from Las Vegas.

Indicating and recording instruments in a panel board on the firing floor assure almost completely automatic operation of the kilns. The burner needs only to observe the instruments and lights to check the operation of the plant. In an emergency, sequence controls on all motors shut down machinery ahead of any trouble spot. When starting up again, the controls make sure that equipment is started in the correct sequence.

A contact cooler at the end of each kiln adds to its thermal efficiency. The kiln drops red-hot lime into an insulated conical hopper holding about 5 tons. A fan pushes outside air up through this mass of hot lime, reducing its temperature to between 150 and 250 deg. F. Lime is withdrawn from the bottom of the hopper with a screw conveyor in a tubular casing acting as an air-lock. This totaly enclosed conveyor is long enough to prevent the loss of air pressure through the bottom.

As a dust control measure, the discharge of the screw conveyor is fitted with a dust collecting hood. This hood is connected to the inlet opening of the fan which pulls hot air and dust from this point into the system. Heated air from the cooling hopper is pushed into the kiln as secondary air, but part of this stream is diverted to be used as primary combustion air at the gas burner.

The quarry at Apex which supplies the limestone for the lime plant was opened in 1945, and was reported in the May, 1947, issue of ROCK



Conical unit is air cooler for red-hot finished lime. Screw and apron conveyors and bucket elevator carry lime to storage

Lime plant *continued . . .*

PRODUCTS. Extensive changes were made in 1953 and detailed in the June, 1956, issue. The new plant required only minor changes in this arrangement, with additional equipment to increase screening and crushing capacity to about 325 tph. Several new faces have been opened in the quarry and blending is done at the primary crusher when dumping the four 18-ton end-dump trucks.

A screening tower was added to the layout to take minus 3-in. stone from the old plant. Kiln feed material is taken out on a 5 x 12-ft. double deck vibrating screen and sent to stockpile or to a rail shipping storage pile. This is the supply of raw limestone for the company's lime-making kilns at Sloan and Henderson. Oversize is taken back to the old plant to be recrushed in a 9 x 38-in. jaw crusher and recycled through the system. Fines are taken out and stockpiled near the old plant for rail shipment.

A tunnel belt conveyor taps the storage pile of kiln-feed rock. Three vibrating feeders in the tunnel draw limestone from the pile to the conveyor, with a pair of gravity discharge gates as standby equipment in the event of power failure. Outside the tunnel the flow of rock can be split between inclined belt conveyors which supply each kiln. Each conveyor discharges to the boot of a bucket elevator which lifts the stone to the top of the stone storage bin. There a small 4 x 6-ft. vibrating screen removes any minus ½-in. dust from the kiln-feed stone before it is dropped into the covered storage bin.

Finished lime from the contact cooler is taken to storage on an inclined apron conveyor. Two bucket elevators, one a standby unit, lift the lime to the top of six steel storage tanks, each holding about 600 tons of quicklime. A 3 x 8-ft. double deck vibrating screen can separate three sizes of lime for storage, if necessary. Otherwise, the elevators bypass the screen and discharge directly to one of the five screw conveyors above five bins. The sixth bin is directly below the elevator discharge and is loaded by gravity.

Three of the lime storage tanks can be tapped to withdraw lime into a collecting screw conveyor which takes lime back to the bucket elevators. In this way the tanks can be emptied to recirculate hot lime or to make blends of material.

The new lime plant will supply a major portion of the needs of the West Coast and Southern California for metallurgical and chemical high-calcium lime for industry. **END**

MAJOR EQUIPMENT IN U. S. LIME CO.'S APEX PLANT

Jaw crusher, 9 x 38-in.	Allen Steel & Metals Co.
Vibrating screen, 5 x 12	W. S. Tyler Co.
Vibrating feeders (3)	Jeffrey Mfg. Co.
Vibrating screens (2), 4 x 6-ft.	Kennedy Van-Saun Mfg. & Engineering Corp.
Kiln feed and preheater	
Kilns (2), 10 x 150 ft., and auxiliary equipment	
Contact coolers	
Lime handling equipment	
Layout and design	

New Barber-Greene conveyor, erected in just 2½ days after the fire, boosts tonnage from 250 tons a day to 250 tons per hour.

Conveyor destroyed by fire on Monday
New one operating Friday

On Monday fire roared up a wooden conveyor owned and operated by a Milwaukee cement block company. Out of the devastation only the wooden "A" frames remained. Without the conveyor, production was at a standstill.

At 6:00 the following morning the owner called the local Barber-Greene distributor to see what could be done. Drawing from his own stock of standardized conveyor components—trusses, idlers, drives—the distributor was able to rush all the necessary components to the burned out plant by noon. And by Friday morning the new conveyor was erected and operating.

This fire and the quick return to normal operations point up the basic advantages of Barber-Greene *standardized* components. These advantages include: quick delivery from stocks of standardized components . . . elimination of engineering time required when building "custom-made" conveyors . . . and fast, easy erection.

Trouble-free operation is an additional benefit of the factory aligned and adjusted drives and terminals. Flexibility in shortening or lengthening your conveyor is another plus.

56-12-PE

Write for Information on Barber-Greene Standardized conveyor components

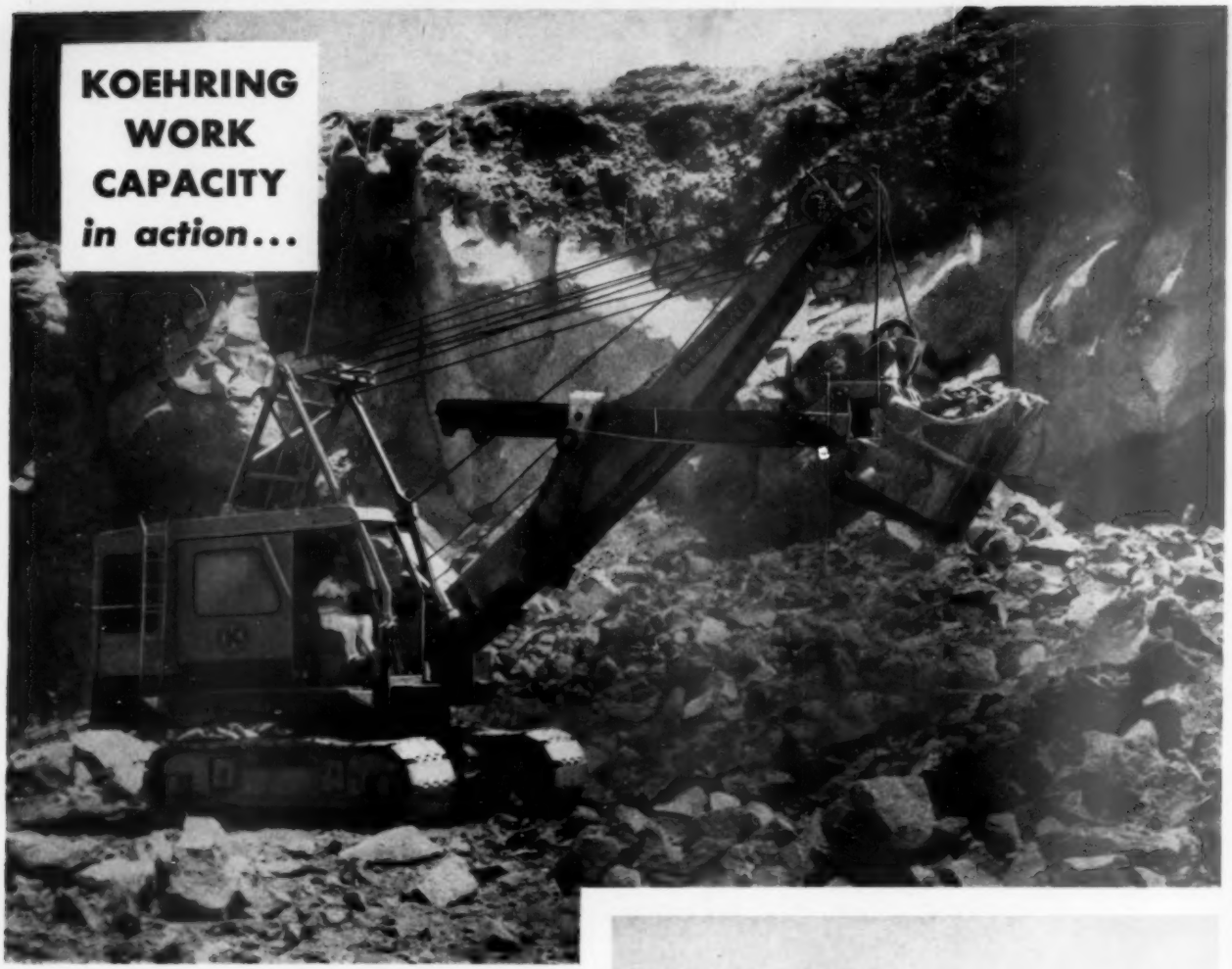
Barber-Greene BG

AURORA, ILLINOIS, U.S.A.

CONVEYORS . . . LOADERS . . . DITCHERS . . . ASPHALT PAVING EQUIPMENT

Enter 1036 on Reader Card

KOEHRING WORK CAPACITY *in action...*



Heavy-duty rock shovel — Owner of this quarry used a Koehring® 1½-yard 605 to load out blasted rock. Powerful, 2-section chain crowd, and rugged digging strength of its deep-section boom and dual dipper sticks proved more than a match for the heavy rock. It's shown here with 22-foot boom, 16½-foot sticks — also available with 28-foot high-lift boom and 23-foot sticks. Strength and stability as a shovel increase the 605's work capacity with all attachments. For proof — check its lift rating in Koehring chart on opposite page.

Long-reach dragline — Here's a special size machine that fills a production gap on many operations — the Koehring 805. It handles 2 to 3-yard dragline bucket on 50 to 150-foot boom. Converts to clamshell, 52-ton lift crane, 2-yard shovel. Have Koehring distributor demonstrate what this big 805 will do on your stripping, stockpiling, lifting, loading.

KOEHRING HEAVY DUTY

KOEHRING DIVISION OF KOEHRING COMPANY, Milwaukee 16, Wis. . .

High-lift stripper — Look at the work range of this 1205 stripping shovel. When equipped with 3-yard dipper on 40-foot boom, it has a cutting height of 42 feet-10 inches, and dumps at 31 foot-5 inch height. That's with boom at 45° angle. Where extra reach is needed, you can use a 2½-yard dipper on 50-foot boom — and get 51 foot-4 inch cutting height, and 40 foot-10 inch dumping height, at a 45° boom angle. (For heaviest digging, a standard Koehring 1205 shovel has 3-yard dipper on 30-foot boom.) Depending on weight of materials, it also handles 3 to 4-yard dragline or clamshell buckets on 60 to 170-foot boom — details in chart below.

25-ton handyman — With its high speed mobility on rubber, Koehring 305 truck crane is a handy, heavy-duty material-handling rig around mines and quarries. Installs machinery, unloads heavy equipment and supplies — safely lifts up to 25 tons. Has full complement of clamshell, dragline, shovel or hoe attachments for all-round use.

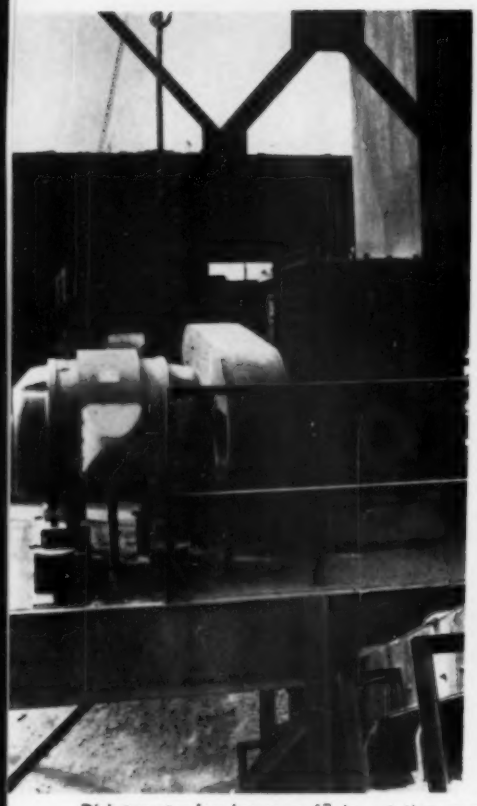
Koehring excavators and cranes also manufactured in:
CANADA • ENGLAND • SPAIN • JAPAN

Quick facts on KOEHRING WORK CAPACITY:

MODEL	TYPE OF MOUNTING	CRANE LIFT CAPACITIES (Rubber-tired machines rated at 85% of tipping load.)	
ON RUBBER			
205	3-axle truck, or 21.5 mph Cruiser	30,000 lbs.	at 12-ft. radius
305	3-axle truck, or 18 mph Cruiser	50,000 lbs.	at 12-ft. radius
435	4-axle truck	70,000 lbs.	at 15-ft. radius
545	4-axle truck	90,000 lbs.	at 15-ft. radius
ON CRAWLERS	Size shovel	CRANE LIFT CAPACITIES (Crawler ratings based on 75% of tipping load.)	
205	½ Cu. Yd.	20,000 lbs.	at 10-ft. radius
305	¾ Cu. Yd.	30,000 lbs.	at 12-ft. radius
405	1 Cu. Yd.	40,000 lbs.	at 12-ft. radius
545	(Crane only — 85% rating)	90,000 lbs.	at 12-ft. radius
605	1½ Cu. Yds.	72,300 lbs.	at 12-ft. radius
805	2 Cu. Yds.	104,200 lbs.	at 12-ft. radius
1205	3 Cu. Yds.	190,000 lbs.	at 12-ft. radius

Extra lift capacity means . . . **MORE WORK CAPACITY WITH ALL ATTACHMENTS**

Enter 1079 on Reader Card



Disintegrator box houses a 42-in. rotating cage

The four jigs remove weak, lightweight materials

Disintegrator, 4 jigs upgrade deposit

A BATTERY OF FOUR JIGS has been teamed up with a gravel disintegrator to produce top-specification aggregates at Standard Slag Company's plant in Massilon, Ohio.

Millions of tons of sand and gravel are available, but without beneficiation the material would not be suitable for concrete construction. From 8 to 15 percent of the raw material is made up of deleterious matter: coal, shale, cherts, fragments of rotten sandstone and, worst of all, limonite nodules. The soft, light materials are easily removed in the jigs, but the well-distributed fraction of limonites is a ticklish problem.

These troublesome nuggets are made up of soft particles enclosed in a thick, brittle shell of ferruginous material. Dense and heavy, the limonite nodules would normally come off the jigs with the best gravels. Then rough handling in storage or in the concrete paving process would make the shells peel off, contaminating high-quality gravel.

Here is where the disintegrator (an impact-type crusher) comes into the picture. All coarse aggregates are first passed through this machine. Its high-speed rotating cage shatters the limonite nodules and reduces shells and soft aggregates to harmless dust. The unexpected advantage of lowering the amount of unsound gravel reaching the jigs more than makes up for the breakdown of large gravel to smaller sizes. Disintegrator dust is removed as a crusher-base product or wasted to tailing ponds by the sand classifier later in the system.

Working together, the disintegrator and the washing jigs have reduced the amount of deleterious materials present in the finished aggregates far below the maximum permitted by the state. Products consistently contain less than two percent soft deleterious materials and less than one percent unbroken limonite nodules. The jigs each yield between 22 and 30 tph. of ¾ in. x No. 4 aggregates, or about 40 tph. of 1½ x ¾-in. gravel.

Gravel washing starts in the pit with selective digging of the best gravel. A 5-cu. yd. dragline brings down a 50-ft. face of gravel into a small

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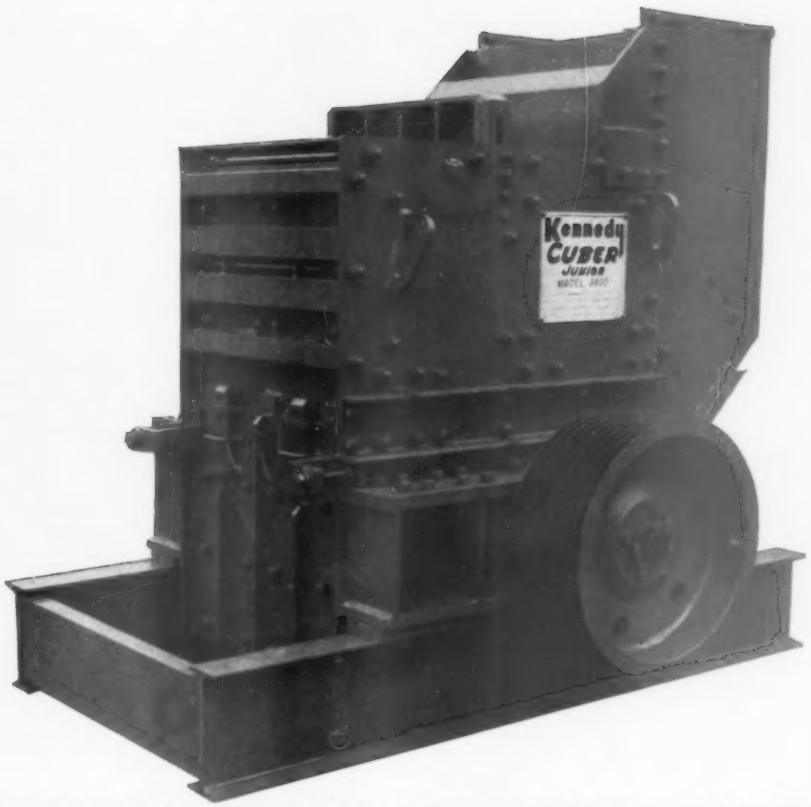


THE KENNEDY CUBER JUNIOR

The ONLY Small Impact Breaker with the Massive Construction of a Dual Rotor Impactor

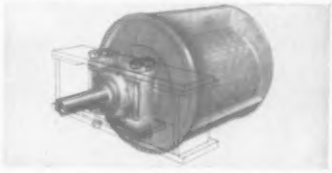
For high tonnage, high ratio of reduction, low cost, and an absolute minimum of flats, the husky, single rotor, 75 to 150 horsepower KENNEDY Cuber Junior answers a vital need. The same exclusive KENNEDY rotor which has been so successful and so economical in the Cuber Senior is responsible for the high performance of the KENNEDY Cuber Junior.

The KENNEDY Cuber Junior

- combines primary and secondary reduction in one operation . . . reduces the number of machines required because of its high capacity. *The result* —marked savings in capital investment.
- shatters rock along the lines of natural cleavage . . . operates on the principle of true, controlled free impact. *The result*—maximum useful output of evenly graded, cubical product.
- is the easiest impact breaker to maintain . . . output and product quality are kept high with the maximum effective use of wearing parts. *The result* —sharply reduced per ton maintenance charges.

The outstanding performance of the KENNEDY Cubers is due to rotor design. The rotor itself is welded, laminated, heavy steel plate. Three cast manganese steel hammers are rigidly attached to the rotor by an exclusive method that permits quick, easy adjustment for wear. The heat treated, alloy steel shaft is pressed and locked into the rotor core. Heavy duty, self-aligning, spherical roller bearings are rigidly attached to the heavy base frame in box section to stand up under the severe punishment of the breaking action. Manganese steel end discs, flush with the main housing liners prevent attrition of material between hammer ends and sides of the Cuber and prevent rounding of the hammer ends, confining wear to the manganese hammers.

This superior rotor is found only in the KENNEDY Cubers.



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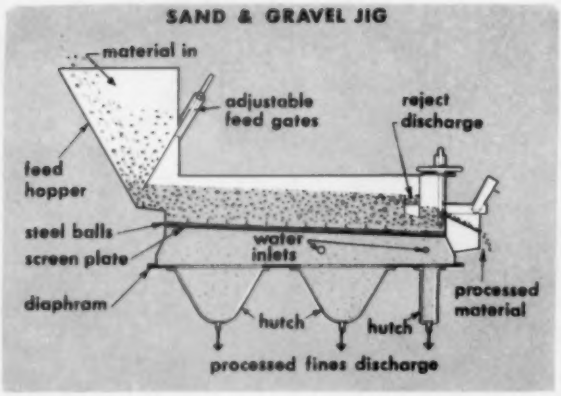
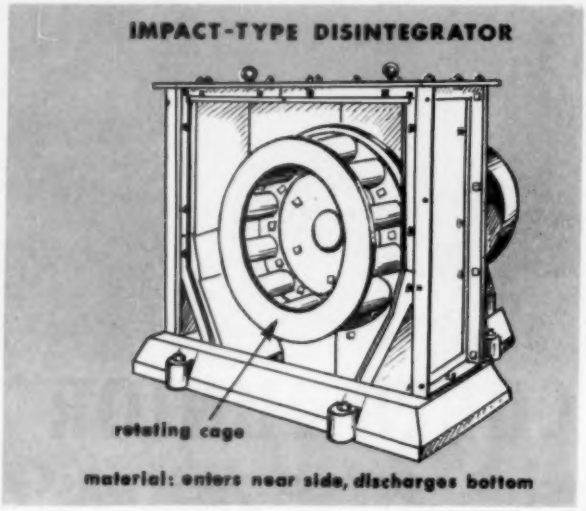


Inside the two key pieces of equipment



Conveyor leading to plant is seen behind 5-cu. yd. dragline

Disintegrator *continued from page 96*

lagoon, dredges the material and places it in a surge pile. The dragline takes all of this well-graded gravel except a few cobbles larger than 24 in., which are discarded to be used as fill.

A reciprocating plate feeder under the center of the surge pile feeds 225 tph. of gravel to the first flight of an 1,800-ft. conveyor system for the long haul from the bottom of the deposit to the top of the first screen in the processing plant. Just ahead of this first screen is a primary jaw crusher to reduce the hard granite cobbles to minus 3 in.

Over half of the raw material is sand, and the screen takes out the sand and drops the coarse aggregates into the disintegrator. Crushing in this unit is done by a heavy, abrasion-resistant steel cage rolling at high speed. The impact of this rotor churning through the gravel at 725 rpm. grinds soft particles to dust and effectively shucks the shells from the limonite nodules.

Crushed gravel is conveyed to a single-deck screen where a minus $\frac{3}{8}$-in. crusher-base material is removed and stockpiled. Oversize is returned to the conveyor handling the natural sand taken out ahead of the disintegrator. (Whenever a washed and crushed sand is needed, the flow of crushed material bypasses the crusher-base screen.)

The flow is split between two scalping screens in the top of the washing and screening tower. Each of these screens scalps out plus $1\frac{1}{2}$-in. gravel, and water sprays sluice the smaller sizes through to the three-deck vibrating screens just below. The oversize is conveyed to a cone crusher to be reduced to minus $1\frac{1}{2}$ in. before it is returned to the conveyor system and recycled to the scalping screens.

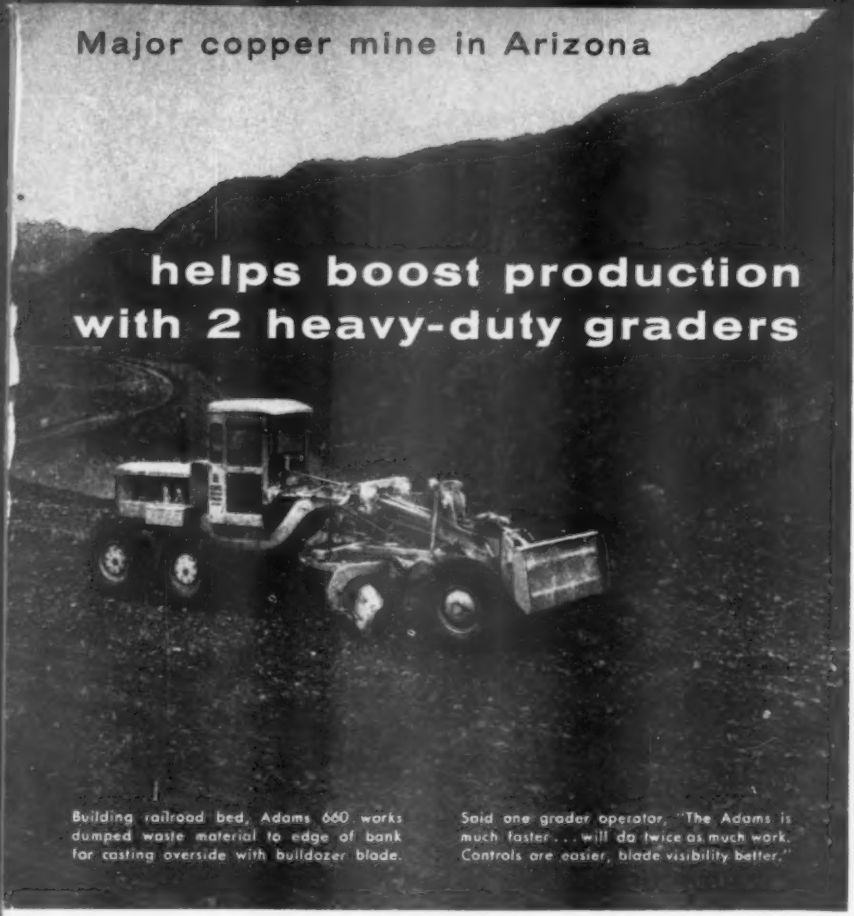
Each of the two lower screens takes off the No. 3 gravel with a $\frac{3}{4}$-in. screen cloth. This $\frac{3}{4}$ x $1\frac{1}{2}$-in. gravel is taken to storage where it is held for beneficiation in the jigs or shipped by truck. The lower deck of each screen takes off another coarse aggregate on a $\frac{3}{16}$-in. screen cloth, with each screen discharging to a single inclined belt conveyor to storage.

A pair of flat-deck vibrating screens over the storage bins split the flow of gravel and remove the No. 6 aggregate, a $\frac{3}{8}$ in. x No. 8 material.

Please turn to page 102

Major copper mine in Arizona

helps boost production with 2 heavy-duty graders



Building railroad bed, Adams 660 works dumped waste material to edge of bank for casting overside with buildozer blade.

Said one grader operator, "The Adams is much faster . . . will do twice as much work. Controls are easier, blade visibility better."

At a large open-pit mine in Arizona, ore is mined at low levels and hauled by railroad cars . . . at higher levels, overburden is removed by a fleet of 35-ton trucks. To help these haulers travel at safe, profitable speeds, and to speed road and rail-spur construction — the mine uses two 150 hp Adams* 660 graders.

Patrols roads 24 hrs. a day, 6 days per week

One of the heavy-duty "660" LeTourneau-Westinghouse units is used primarily for maintaining many miles of haul roads. This fast-moving grader patrols these busy mine roads 24 hours a day, 6 days a week. It goes wherever needed . . . to fill ruts, level washboard, clear debris dropped by overloaded haulers and improve drainage.

For working along steep drop-offs, the Adams' standard blade extends a full 7½ ft. beyond wheel line, to give operator safe working margin. Extra-safe dual-braking system stops transmission as well as tandem drive-wheels for sure, safe stops and minimum brake wear.

Helps build new roads, RR grades

The second "660" grader — equipped with bulldozer blade — is used on new construction work and for maintaining waste dump. When constructing new roads or railroad beds, the "660" handles all the blade work.

Works any kind of material

Wide range of speeds give Adams advantage for working efficiently in any kind of material. All 80 to 150 hp Adams graders have an 8 forward and 4 reverse speed transmission. In addition, optional 3-speed "creeper" gears (0.23 to 1.82 mph) may be added. These low, full-power speeds move heavier loads, handle rocky material with greater speed and safety, insure more accurate blade control for fine finishing around forms or obstructions.

Adams' largest grader — the powerful 190 hp POWER-*Flow* 660, with torque converter — gives you an infinite number of speeds forward to 27.4 mph . . . reverse to 24.4 mph. Adams' smallest, the 60 hp "220", has 5 speeds forward to 18.3 mph — best in its class.

See Adams in action

Why not see how you, too, can step up mine and quarry production, cut operating costs—with heavy-duty Adams graders? There are 7 models: 190, 160, 123, 115, 80, 60 hp. Choice of GM or Cummins engines on 6 larger models. Call or write for a demonstration at your pit.

With dozer blade, "660" maintains waste dump. Over 72% of the total amount of material mined at this copper mine is waste.

Powerful "660" helps build exploration roads and RR road beds fast and easy. Commenting on the Adams grader, the second operator said, "I like the power and weight of the '660'. Also, the big 14-ft. moldboard and wide choice of speeds."

*Trademark G-1483-M-1

LeTOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS

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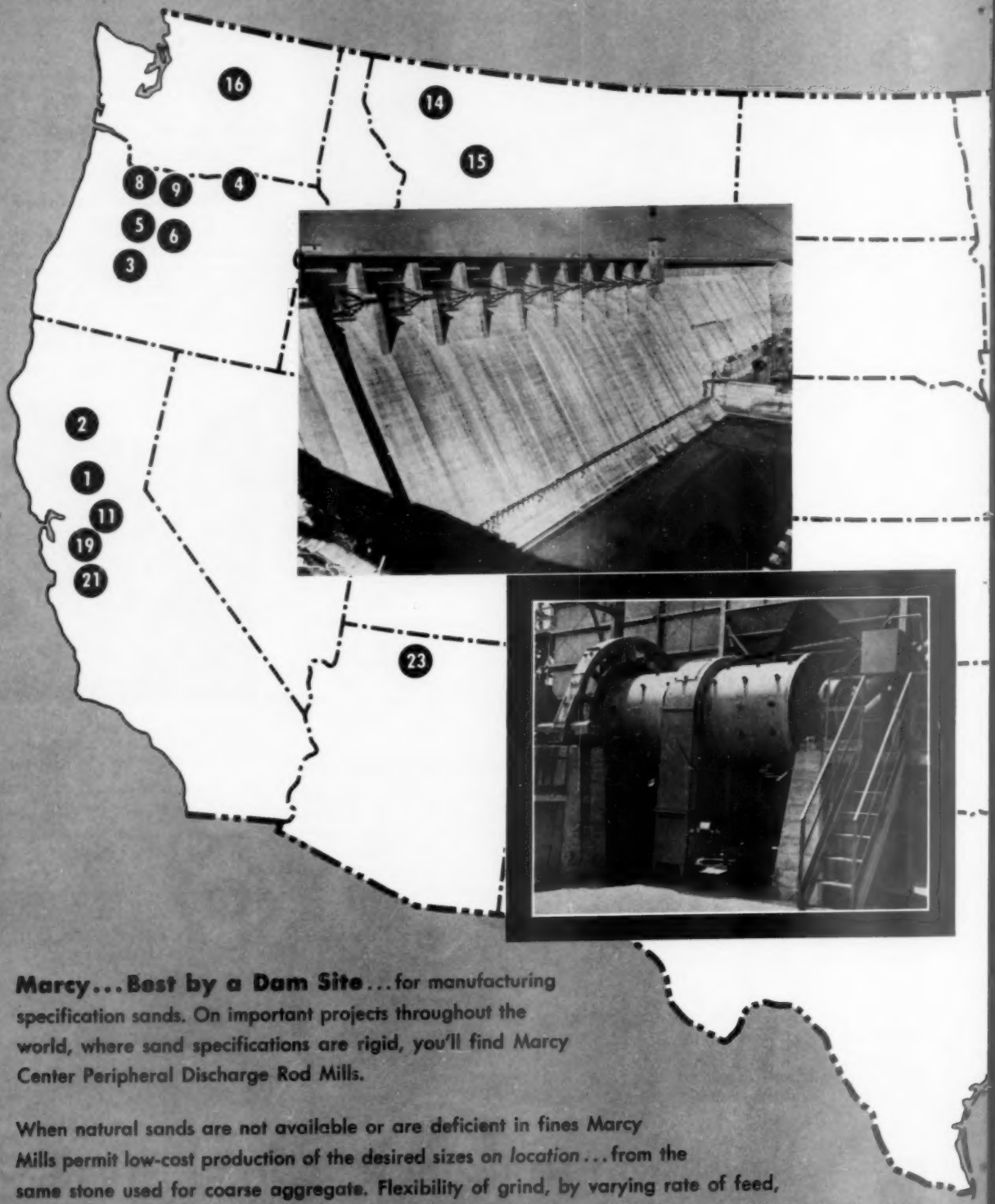
Where quality is a habit

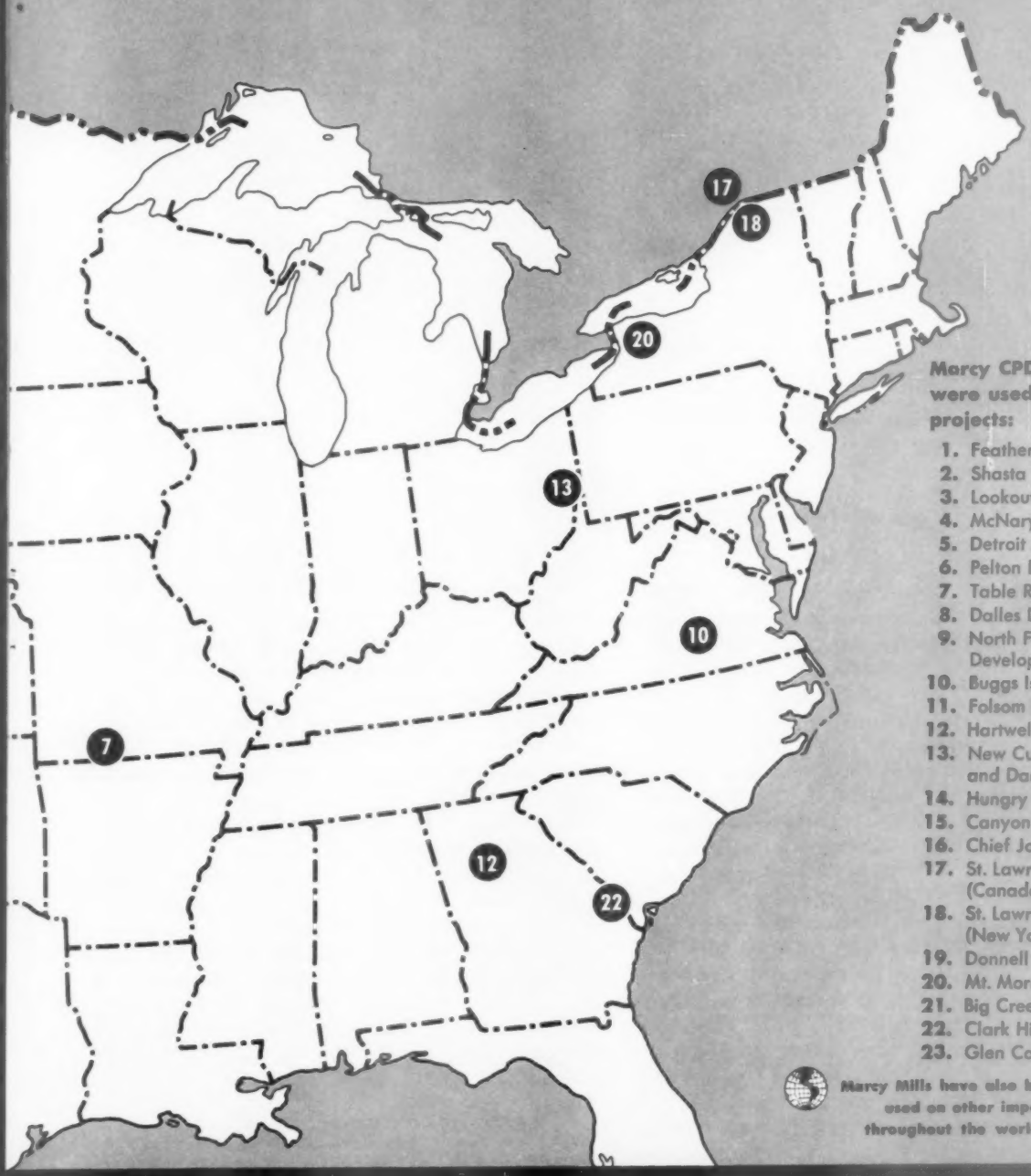
MARCY CPD MILLS



Marcy...Best by a Dam Site...for manufacturing specification sands. On important projects throughout the world, where sand specifications are rigid, you'll find Marcy Center Peripheral Discharge Rod Mills.

When natural sands are not available or are deficient in fines Marcy Mills permit low-cost production of the desired sizes *on location*...from the same stone used for coarse aggregate. Flexibility of grind, by varying rate of feed, pulp dilution, and discharge port area, makes it possible to easily change gradation of finished product to meet different requirements.

Best by a Dam Site



Marcy CPD Mills were used on these projects:

1. Feather River Dam
2. Shasta Dam
3. Lookout Point Dam
4. McNary Dam
5. Detroit Dam
6. Pelton Dam
7. Table Rock Dam
8. Dalles Dam
9. North Fork Hydroelectric Development
10. Buggs Island Dam
11. Folsom Dam
12. Hartwell Dam
13. New Cumberland Locks and Dam
14. Hungry Horse Dam
15. Canyon Ferry Dam
16. Chief Joseph Dam
17. St. Lawrence Seaway (Canada)
18. St. Lawrence Seaway (New York)
19. Donnell Dam
20. Mt. Morris Dam
21. Big Creek No. 4 Dam
22. Clark Hill Dam
23. Glen Canyon Dam

Marcy Mills have also been used on other important dam projects throughout the world.

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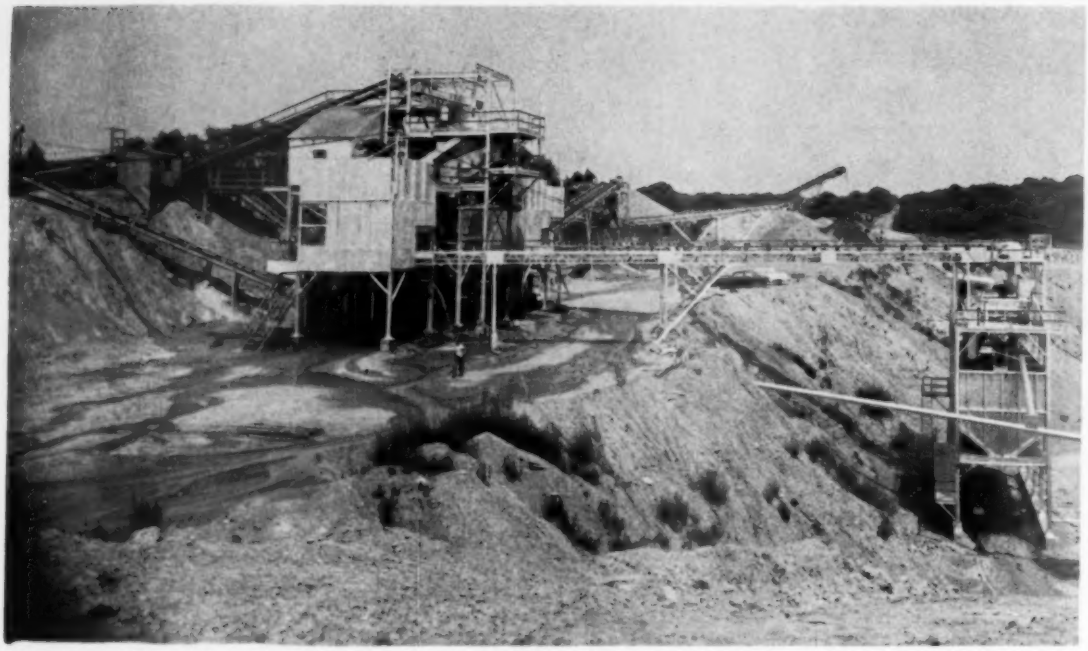

Screening, washing and crushing takes place in tower at left; jigging at right

Disintegrator *continued from page 98*

The ¾ x ⅜-in. aggregate, the No. 4 size, is discharged to storage over the ends of the screens. Each of the two storage bins can discharge, through a manually operated gate, to either of two 18-in.-wide belt conveyors to supply the jigs. Or each of the storage bins can discharge to trucks if further processing is not needed.

Manually operated gates make satisfactory control for the volume of material flowing from the hoppers to the belt conveyors. Belt feeders might be more precise, but this accuracy is not needed.

Four 5 x 7-ft. beneficiating jigs handle the three sizes of gravel. One pair is arranged to take No. 4 or No. 6; the other pair, only No. 3 gravel. The original installation was so successful that the fourth unit was added to take care of a larger volume of the largest size, the No. 3. The four jigs are perched above a bank of four storage bins —one for each of the three sizes and one for the refuse collected from all four jigs.

Each jig uses about 500 gpm. of wash water, and a bed of material about 6 in. deep is maintained. The gravel is fed to the machine at the head end, and the upward motion of the water through the perforated support plate and the bed of material quickly stratifies the gravel. At the discharge end of the jig, the light particles are at the top and the dense, heavy gravel has worked to the bottom of the bed. An adjustable plate determines the depth of material accepted; this plate is always set to take care of the worst possible condition. The loss of quality gravel is considered to be of less value than the expense of constant supervision to adjust the split of material to take care of surges of rejects. This reject material produced is sound enough for many applications and finds a market in Massilon area.

Processed gravel from the storage bins under the jigs is trucked to storage piles in the worked-out areas of the gravel pit, where the permeable ground is ideal for pile drainage. A front-end loader makes piles, keeps materials segregated and loads out trucks for shipment.

Water from the jigs, washing screens and sand classifier is wasted to a tailing pond near the plant. Fresh water is pumped to the plant from wells which are replenished by the tailing pond. Seepage from pile-draining materials also finds its way to the water table.

MAJOR EQUIPMENT USED BY STANDARD SLAG CO.

Dragline with 5-cu. yd. bucket	Manitowoc Engineering Corp.
Conveyors	Standard Slag Co.
Primary crusher, jaw	Universal Engineering Corp.
Disintegrator	Stedman Foundry and Machine Co.
Vibrating screens (9)	Simplicity Engineering Co. (6); Screen Equipment Co. (3)
Gravel jigs (4), 5 x 7 ft.	Meckum Engineering, Inc.
Sand classifier	Eagle Iron Works
Pumps (2)	The Deming Co.
Clamshell crane, 1 cu. yd.	Bucyrus-Erie Co.
Front-end loader, 2½ cu. yd.	Pettibone-Mulliken Corp.

Please turn to page 140

This Link-Belt SS chain has carried over one million tons annually for 16 years

LINK-BELT SS-1146 BUSHED CHAIN on elevator at Whitehall Cement Mfg. Co. measures 20⅝ in. wide. This original chain has been in use since 1941 and, considering the rugged conditions, has needed amazingly few replacements of pins, bushings or links.

Installed on elevators handling cement clinker 24 hours a day

The remarkable performance of Link-Belt SS-1146 bushed chain at Whitehall Cement Mfg. Co., Cementon, Pa., testifies to its exceptional strength and wear resistance . . . emphasizes the economy of choosing the right chain for a specific job. Since 1941, each of three elevators has handled approximately 17 million tons of highly abrasive cement clinker.

Repeated success

This outstanding record of continuous chain service under the toughest conditions is by no means a rare case. Numerous installations report similar results achieved with this long-life wear-resistant chain.

Link-Belt SS-1146 bushed chain offers large joint bearing surfaces for greater wear resistance and trouble-free service in heavy-duty conveying and elevating. Sidebars of selected steel are accurately formed and machined for tight press fit of pins and bushings. The latter are made from tough, hardened steel and locked against rotation in sidebars.

For abrasive jobs

These straight steel sidebars with hardened steel pins and bushings provide needed strength to resist heavy continuous loads. Smooth, hardened surfaces resist abrasive action of gritty materials, prevent packing in critical joints.

18 million tons, 26 years later... SS-856 chain still serviceable

Sets record in cement mill elevator service

The more than quarter-century of continuous handling of raw materials at a Pennsylvania cement mill illustrates the long-wearing durability of Link-Belt SS-856 elevator chain. This amazing service record under extremely tough conditions proves that it pays to pick the right chain from Link-Belt's complete line.

Link-Belt SS-856 chain is made of high carbon steel sidebars with nickel alloy pins and bushings. Hardened sidebars give additional strength plus greater resistance to wear and pitch hole distortion. In addition, accurately machined pitch holes assure proper pitch and tight press fit of mating parts —extend chain life. The hard, smooth surfaces of steel joints repel gritty materials . . . resist abrasion.

Link-Belt elevator chains are available with ultimate strengths up to 200,000 lbs.

Link-Belt SS-102½ bushed chain extends life of stone elevator

Several years ago an eastern stone quarry installed a main bucket elevator to handle 200 tons per hour of minus 2¼-in. mixed stone. Service life of the original two-strand elevator chain was found inadequate. After several shutdowns, it was replaced with Link-Belt SS-102½ chain with K-5 attachments at every third link.

This long-life, wear-resistant chain is now in its fourth year of uninterrupted operation. It has carried over 475,000 tons as compared to 60,000 tons which was normal life for the previous chain.

Recent inspection of the SS-102½ chain reveals that it is good for another long stretch of service. Elimination of shutdowns and replacements more than justified the slight difference in cost between this and the original chain.

STONE ELEVATOR has buckets at every third link. Centers are 65 feet, with elevator inclined 75 degrees from the grade. Chain speed is 280 feet per minute.

HEADQUARTERS for chains, sprockets and other Link-Belt products is your nearby Link-Belt factory branch store or authorized stock-carrying distributor. Refer to the yellow pages of your local telephone directory.

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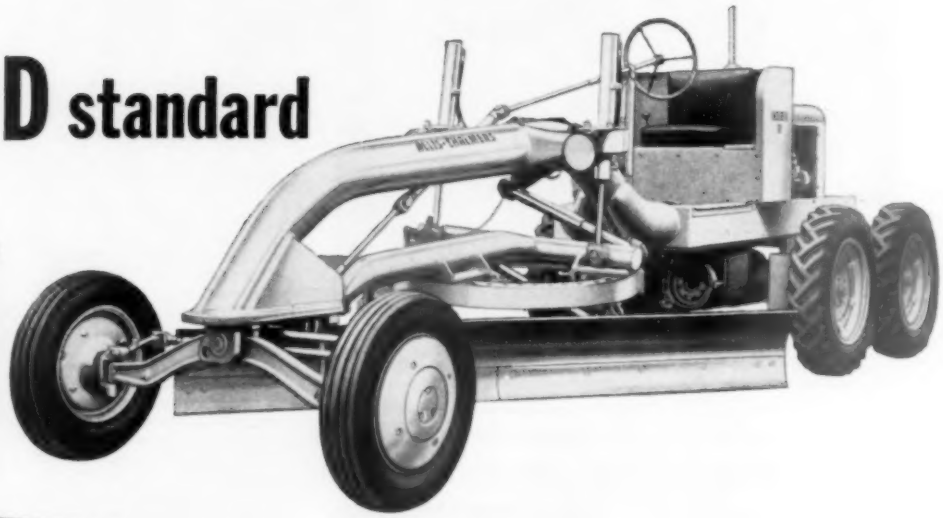
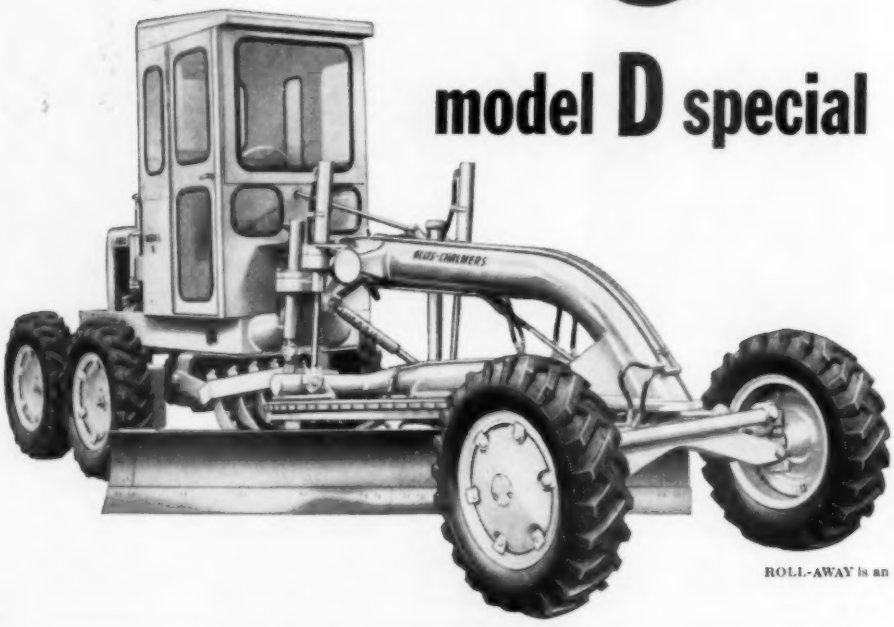
model D standard

50 hp
Approx. weight
8,800 lb (gasoline)
Approx. weight
9,350 lb (diesel)





model D special

50 hp
Approx. weight
10,900 lb (gasoline)
Approx. weight
11,450 lb (diesel)
4 forward speeds to 25 mph (approx.)
1 reverse speed to 3 mph (approx.)
All-steel cab*
Shiftable moldboard*
Hydraulic scarifier*
Leaning front wheels*
Power circle turn*

*Also available with the model D standard as optional equipment.

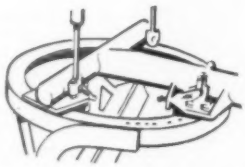
ROLL-AWAY is an Allis-Chalmers trademark.

and construction work

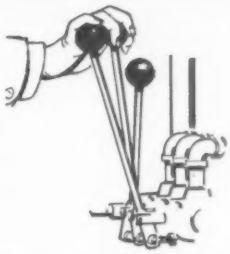
MODEL D MOTOR GRADER

many production-boosting advantages

The ROLL-AWAY moldboard rolls dirt up and ahead to eliminate packing, reducing friction . . . gives you more performance per horsepower, more production per gallon of fuel.



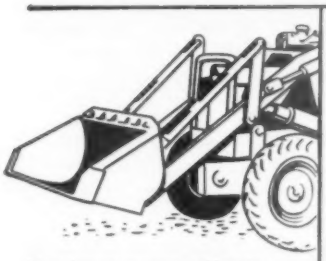
Revolving circle and heavy tubular drawbar provide exceptionally stable moldboard mounting.



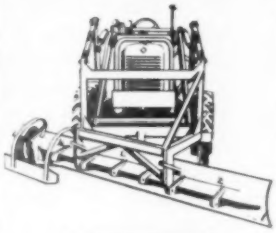
Convenient hydraulic controls, easy to operate. Two levers fit into one hand to control circle lift.

Positive tandem drive gives you four driving wheels under the heavy end of the grader.

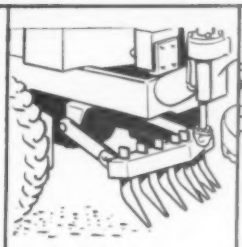
many job-multiplying attachments



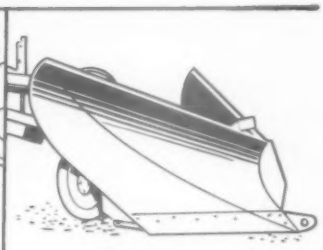
⅝-yd rear-mounted loader



Interchangeable shoulder maintainer



Midship-mounted scarifier



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ALLIS-CHALMERS, CONSTRUCTION MACHINERY DIVISION, MILWAUKEE 1, WISCONSIN

Look ahead... *move ahead*...and stay ahead

with ALLIS-CHALMERS

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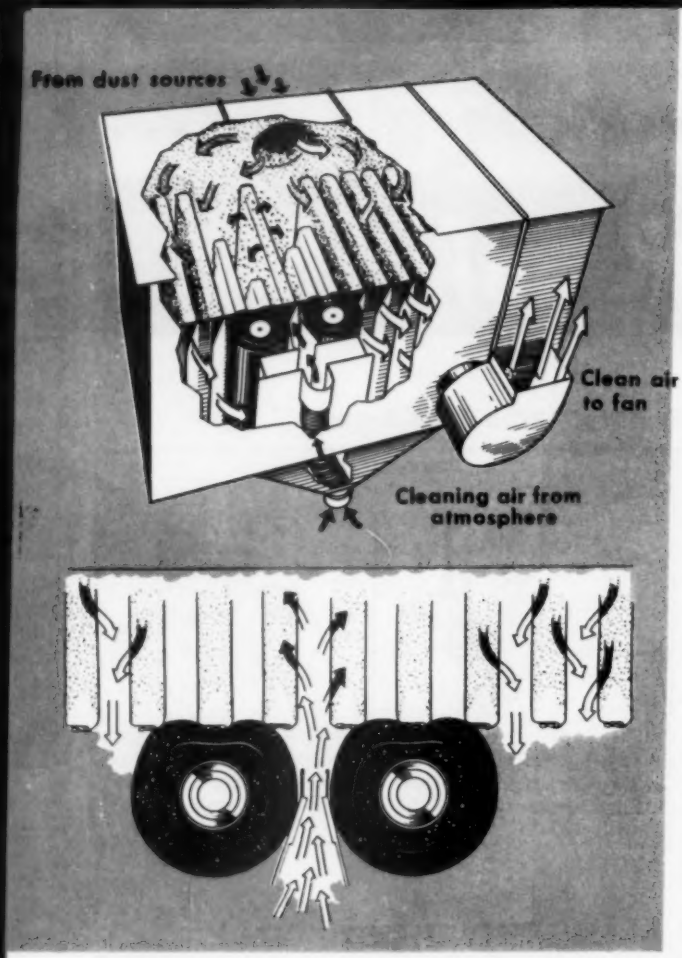


Gypsum plant licks dust problem

By ALLEN H. JONES*

A CONTINUOUSLY OPERATING, SELF-CLEANING dust filter and a drop-out box are the only components required to prevent the escape of dust from the perlite-conveying system at The U. S. Gypsum Company's River Rouge, Mich., plant. Since the fall of 1956, the filter has served the system 24 hr. a day, 5 or 6 days a week. The dust load is extremely heavy and temperatures are quite high, but except for the expected normal maintenance, the filter has required no servicing.

The expanded perlite has to be conveyed from the expander department to the blending and packaging department, and the only practical method of moving the material is air conveying. The changeover from sand to expanded perlite in making its ready-mixed plaster resulted in a much improved product for U. S. Gypsum, but it also created a considerable dust problem. Main reason: the lightweight quality of perlite, which weighs only about 8 lb. per cu. ft. Its abrasiveness, in turn, caused an acute maintenance problem in one of the methods set up to correct the dust situation.

The unit that solved these problems is a dust filter that has one tier of cloth flat bags with a net cloth area of 1,232 sq. ft. in a 10-ft.-long case.

With the original model, due to the flat-face traveler it was necessary to provide a false wall in the clean-air chamber. The false wall consisted of separate mullions, all backed with neoprene sponge rubber to form a seal against the wall, preventing air leakage while the bags were cleaned in succession by reverse cleaning air.

To eliminate the false wall and make bag changing easier, the flat-face traveler has been replaced by resilient rubber rolls. The rolls are soft enough to both roll over the dust wall and form a complete seal of the two filter bags on either side of the bag being cleaned. This eliminates the need for the false mullions and rubber strips on the face of the dust wall.

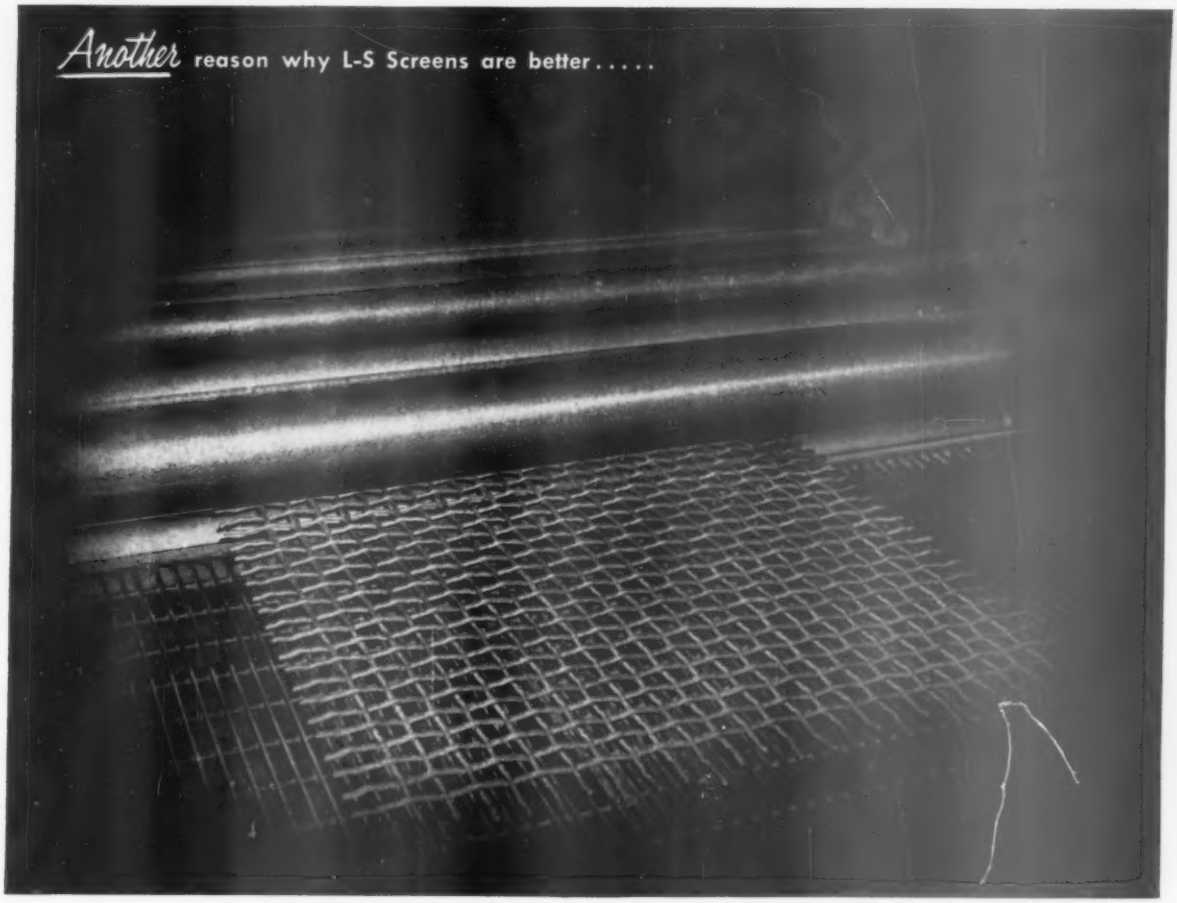
The first perlite-conveying system set up at the River Rouge plant consisted of a blowpipe which transported the perlite and blew it into a low-pressure cyclone installed high on the plant roof above the blending area. It was hoped that the fines discharged from the cyclone would be negligible, but this was not the case.

At this point U. S. Gypsum engineers began a thorough reappraisal of the dust problem. The air volume was established at 2,000 cfm. and the system static pressure at 18 in. wg. Because of the continuous nature of the conveying process, it was decided that a continuously operating and automatically self-cleaning dust filter was required.

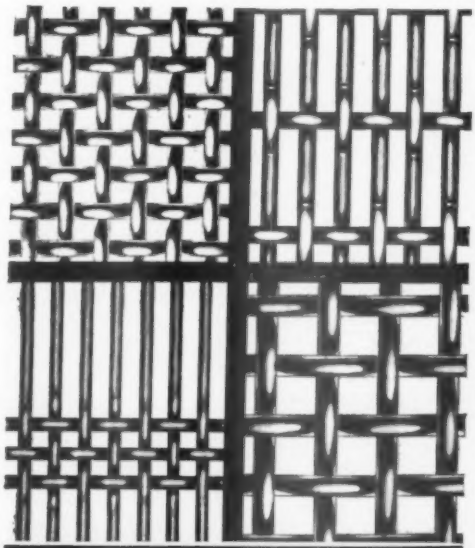
The dust filter was installed next to the cyclone on the building roof with the cyclone vent opening connected to the dust filter. The fan was placed adjacent to the dust filter and the system and filter were operated under a negative pressure, due to these factors: The severe nature of finely divided perlite; elevated temperature introduced by the expander; very high dust loading; unusually high static pressure.

As the system is now set up, the dust collected by the filter drops into its hoppers and then into a screw conveyor which discharges and intermingles the dust with the stream of material pouring into the storage bin below the cyclone. Shortly afterwards, it was found that the cyclone was not required, and a simple drop-out box was installed in its place. END

* Allen Jones is director of engineering of the W. W. Sly Mfg. Co.



Leveling machines built by LUDLOW-SAYLOR guarantee that L-S Screens are true, free of buckles and distortion



Ludlow-Saylor Screens and Wire Cloth can be furnished of stainless, oil-tempered, high-carbon, monel, bronze, copper, brass, or any other wire.

To make sure that every screen we ship is perfectly flat and square, free of bulges and distortion, we put it through an exclusive leveling operation on machines we designed and built ourselves. It is a time-consuming and costly extra that L-S customers appreciate—and one which costs them nothing.

This added attention to quality is typical of the care devoted to making L-S Screens better—just one more reason why they last longer, stay accurate longer, under the toughest conditions. *Insist on L-S Screens—get more for every dollar you spend!*

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Enter 1106 on Reader Card

Alpha opens to serve

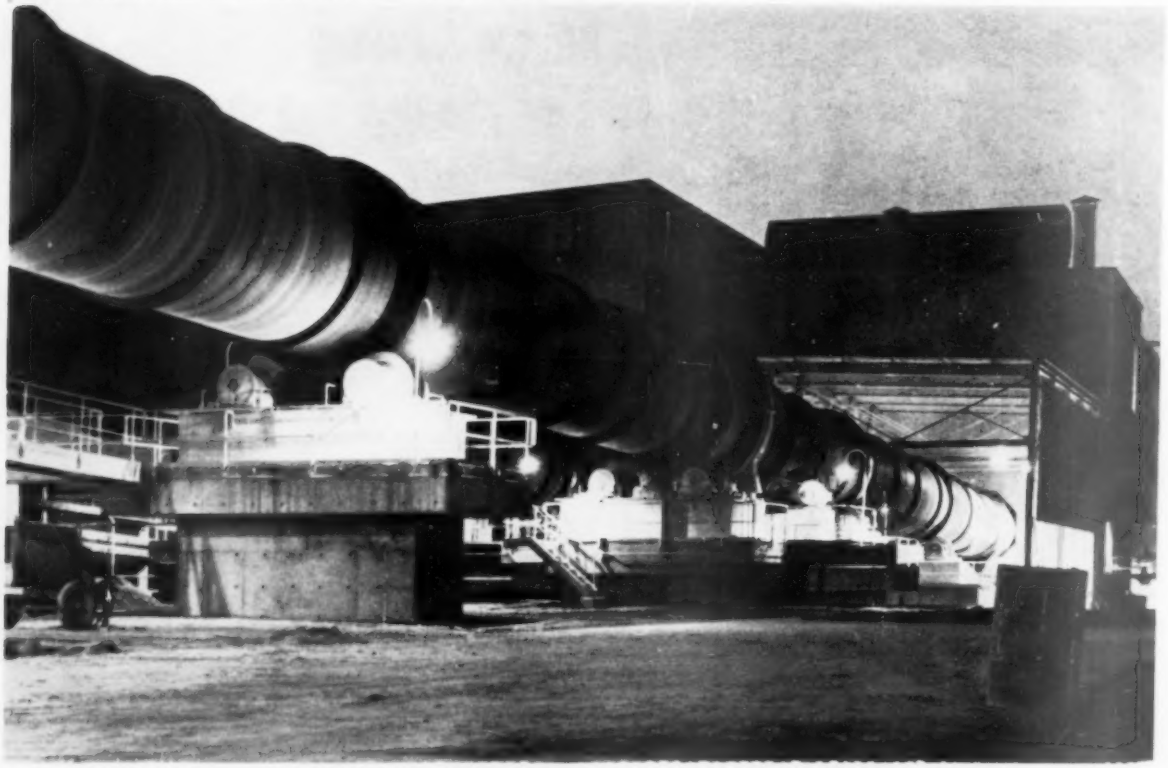
Quarry is worked with two 2½-cu. yd. shovels, five trucks

A NEW CEMENT PLANT to serve the Baltimore-Washington marketing area was officially opened by Alpha Portland Cement Co. on September 9 at Lime Kiln, Md. The opening was attended by many representatives of industry, the trade press and the neighboring community of Frederick. A reception and official welcome to the area by the Frederick Chamber of Commerce followed the open house and opening ceremonies.

This clean, tight, efficient plant is the culmination of Alpha's three-year modernization and expansion program which has cost more than $28 million. With this addition to the company's capacity, its plants can produce more than 15 million bbl. of finished cement annually—better than 20 percent increase in 10 years.

The new cement plant was planned to be one of the most efficient in the country when it reaches full production. It will then have an annual capacity of about 2¼ million bbl. with a work force of 140 men. The $17½ million installation will provide concrete products producers and other cement users in the market with prompt delivery of top

The two 400-ft. kilns will produce 2¼ million bbl. per year



new cement plant Baltimore area

quality cement. Constant and precise production control will assure the uniformity of the product, while superlative shipping facilities will enable the plant to make around-the-clock shipment and 24-hr. delivery almost everywhere in the district.

Production efficiency started with the layout of the plant and its construction on the 1,000-acre tract. The entire area was drilled and the cores analyzed. This gave the designers the picture of the depth and composition of the underlying Frederick Limestone formation—first step in planning the sequence of quarrying and control of the raw limestone mix.

Drilling revealed a number of voids and fissures in the deposit. Excavations and deep pits were located in these natural cavities to reduce the amount of blasting, excavation and backfilling to a minimum. Silos and heavy equipment were spotted on solid rock, carefully avoiding weak rock structures and reducing the cost of foundations.

Push button operation of the machinery and laboratory control of the products of each operation have brought this plant one step closer to fully automatic operation. This assures a continuous flow of exactly proportioned ingredients at every step of production.

Dust collection improves operating efficiency. Dust control equipment at Alpha's new plant cost more than $1 million and it removes more than 99 percent of the dust generated by the kilns. These are served with mechanical and electrostatic dust collectors in series. But other sources of dust are not neglected—the crushers, mills, and packaging operations are equipped with dust control.

Efficiency is increased with the use of large equipment. A pair of 2½ cu. yd. shovels at each face in the quarry load the five huge haulage trucks. A crude blend of the stone from each face is crushed in a 48 x 60 in. primary jaw crusher at the rate of 350 to 450 tph. Screened, crushed and recycled until it is all minus ¾ in., the raw limestone is conveyed to an 80 x 680-ft. covered storage area.

The two 9 x 37-ft. three-compartment tube mills prepare the slurry of rock, sand and iron ore, and the finished slurry is stored in continuously agitated tanks before it is fed to one of the two large 11¼ x 400-ft. coal-fired kilns. The proportions of raw materials are determined by the laboratory

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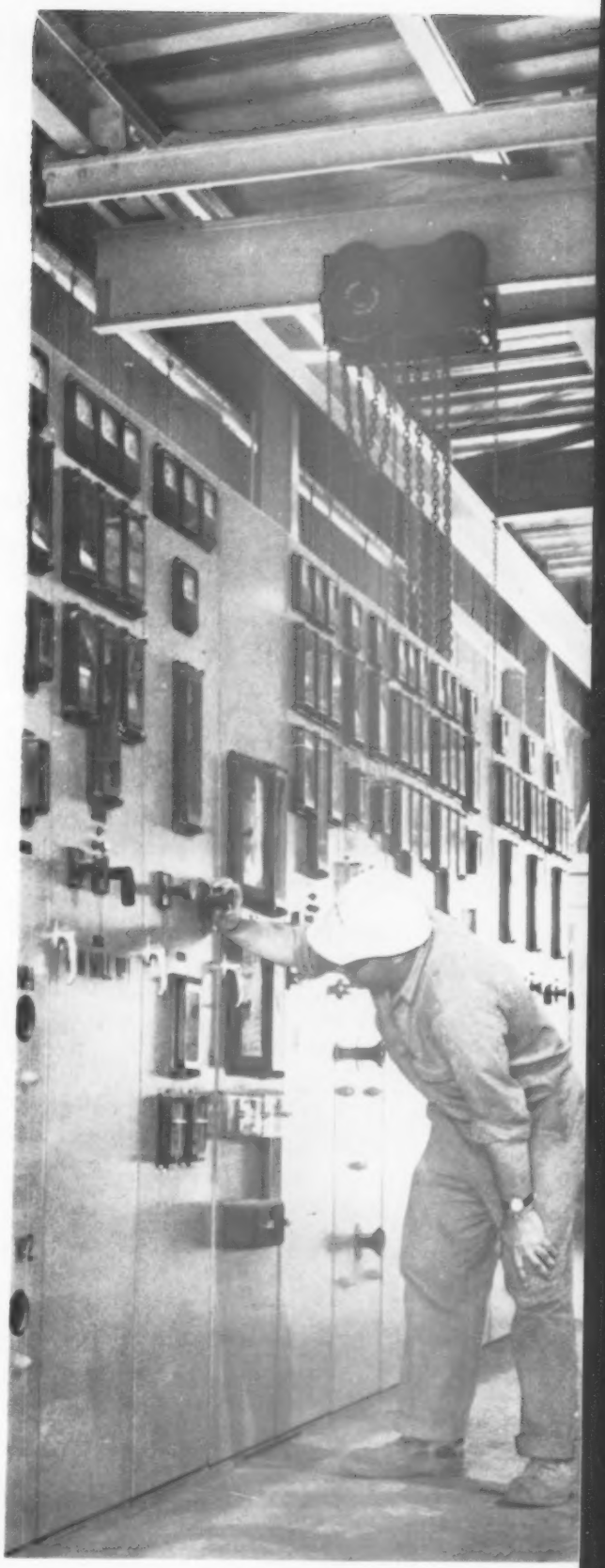


Dayton V-Belts Still Running After 2 Years in Quarry's Destructive Rock Dust

"Dayton V-Belt Drives operating 54 hours a week the year 'round, with no downtime . . ."—Arthur J. Arndt, Superintendent, A. G. Kurtz & Sons, Inc., quarry at Denver, Pennsylvania.

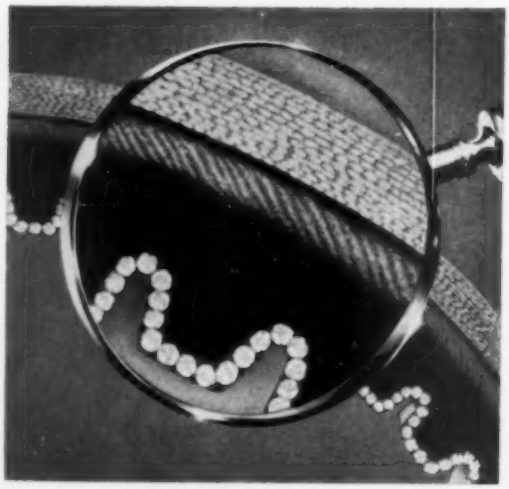
"Not a single one of our 60 Dayton V-Belts has failed on its own account or caused a minute's downtime in over two years," reports Mr. Arthur J. Arndt, quarry superintendent for A. G. Kurtz & Sons, Inc. "When you consider that we're running 54 hours a week the year around, that's proof enough that Dayton V-Belts stand up under the toughest types of quarry operation.

"Downtime, of course, would mean a serious loss. Ours is a continuous operation and 23 men are idled while a drive is stopped. Although a set of V-Belts costs $200, it is nothing compared to the downtime costs.

"It's reassuring to know that we can protect ourselves from such heavy expense by relying on high quality, multi-matched Dayton V-Belts. And when we do need a replacement, our local Dayton Distributor, Raub Supply Co. in Lancaster, is always ready to deliver a matched set in half an hour.

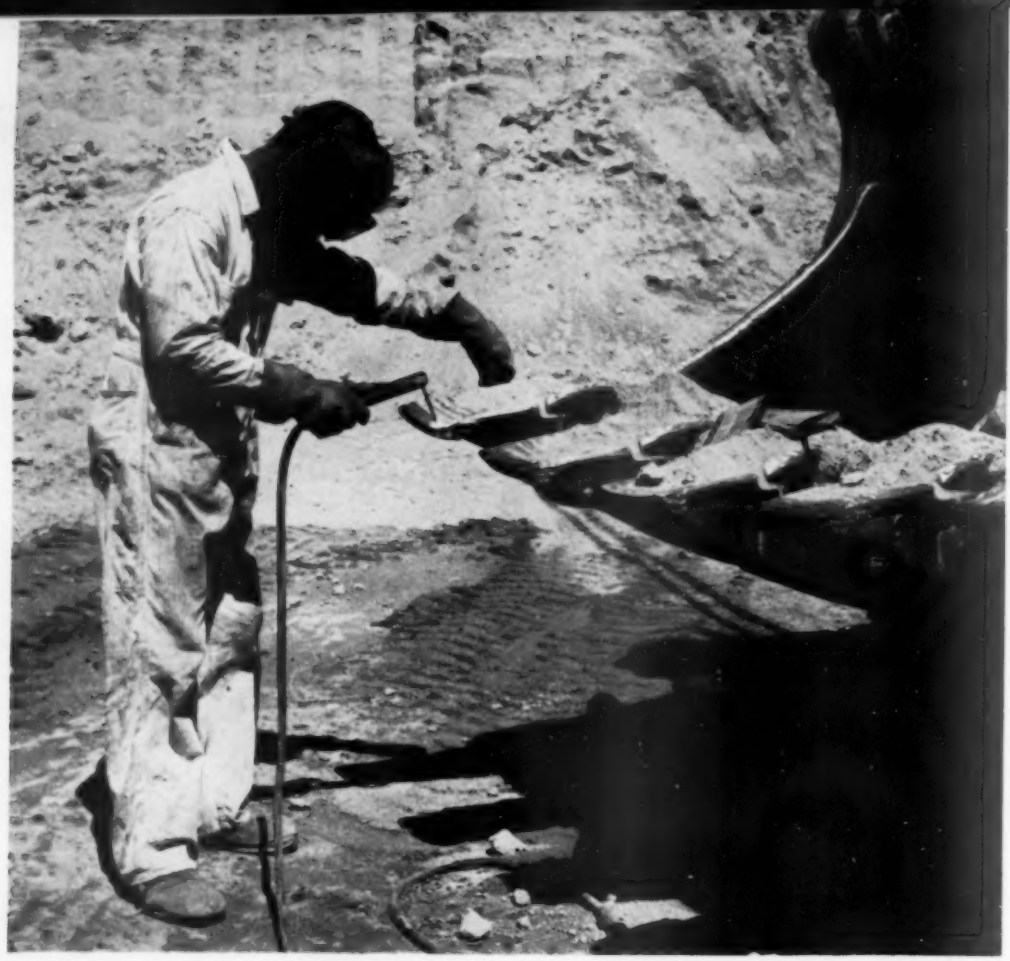
"We protect our Dayton V-Belts as well as we can with stone guards and good preventive maintenance but we can't combat the abrasive grit and dust that's always present in a quarry. That's why we've used Dayton V-Belts for over 10 years—they've proved they can last on a job that chews up other V-Belts."

For more information and help in solving your power transmission problems, see BELTING in the Yellow Pages for the name and phone number of your nearest Dayton Distributor. Or write the Dayton Rubber Company, Industrial Division, Dayton 1, Ohio.



Dayton Cog-Belts, with their raw-edge sides, add up to 40% more pulling power for V-flat drives. Cog-Belts last longer, too, because the patented Cog construction clears the sheave grooves of abrasive material before it can wedge into the belt and cut the strength-giving cords.

"Destructive rock dust is everywhere in a quarry, yet a matched set of Dayton V-Belts will last at least two years without downtime." Examining some Dayton V-Belts from A. G. Kurtz's reserve stock are (l. to r.) Kenneth N. John, Raub Supply Co., the Dayton Distributor; Arthur J. Arndt; John C. Morgan, the Dayton representative; and Harry K. Kurtz, President, H. G. Kurtz & Sons, Inc.



Shovel bucket teeth are hard-faced after use to triple their life

By ALBERT J. ZVANUT*

Cut costs, try hard-facing

MAINTENANCE OF CRUSHING and materials-handling equipment in earlier days consisted mainly of "wear it out, throw it away and put in a new part." Operating costs today have completely changed that procedure. The maintenance superintendent has brand new importance. His job has become one of cutting production costs by getting longer service from every piece of equipment, of restoring instead of junking worn parts and of increasing production by reducing down-time for machinery replacements.

Hard-facing by various welding methods now is a major factor in increasing operating efficiency. The wearing surfaces of almost every piece of equipment can be economically rebuilt with welding electrodes specifically adapted to the base metal in question, then can be overlaid with long-wearing hard-facing alloys designed exactly for the service the part has to do. There is a hard metal and a method of application for almost every job.

Advances in welding processes within the past few years give the maintenance man valuable new tools. The familiar manual welding method needs no comment; it will always be important in the hard-facing of small parts that must be welded in position.

The fully automatic welding head is ideal for hard-facing heavy cylindrical or flat parts where work can be positioned for continuous welding—tractor rolls, crusher shells and scraper blades, for example. This method has the virtues of speed, uniformity and economy. Since the introduction in 1948 of a series of fabricated wires carrying the

Please turn to page 116

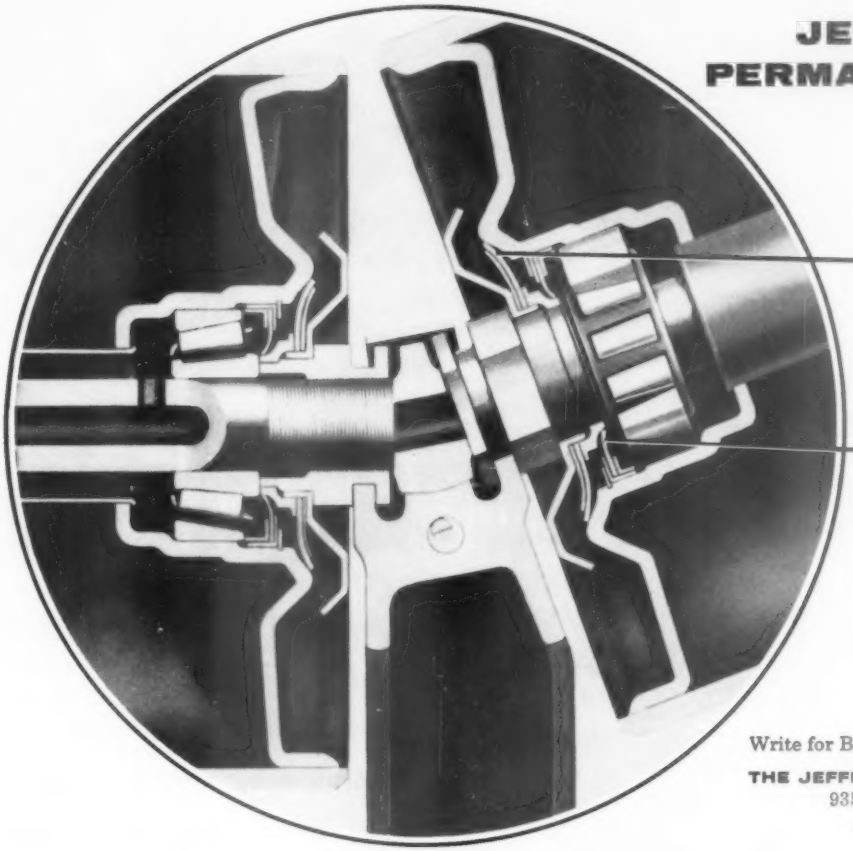
Albert J. Zvanut, sales metallurgist of Stoody Co., is a graduate engineer of the Missouri School of Mines and Metallurgy. He has worked for many years in the development of hard-facing alloys for major producers of electrodes. Current research covers the fields of both materials and applications. Mr. Zvanut represents his firm in the American Welding Society, and has been the author of various papers on hard-facing.

"One lubrication every two years, more than sufficient"

Just part of the glowing report on the performance of Jeffrey PERMASEAL® Belt Idlers from the superintendent of Pennsylvania Railroad ore docks in Philadelphia. He further stated: "PERMASEAL Idlers have extended greasing periods from months to years." They have been on the job since November, 1953.

New seal construction, efficiently designed roller units, dependability, and long life combined with precision manufacture provide unmatched performance. You'll find Jeffrey idler design superior to anything offered today for belt conveyor service.

JEFFREY PERMASEAL® IDLERS



Magnified view of the heart of the PERMASEAL IDLER—shows double flexible diaphragm seals, bearings, and welded roll ends.

Write for Bulletin No. 925

THE JEFFREY MANUFACTURING CO.
935 North Fourth Street
Columbus 16, Ohio

JEFFREY

CONVEYING • PROCESSING • MINING EQUIPMENT...
TRANSMISSION MACHINERY...CONTRACT MANUFACTURING

Enter 1086 on Reader Card

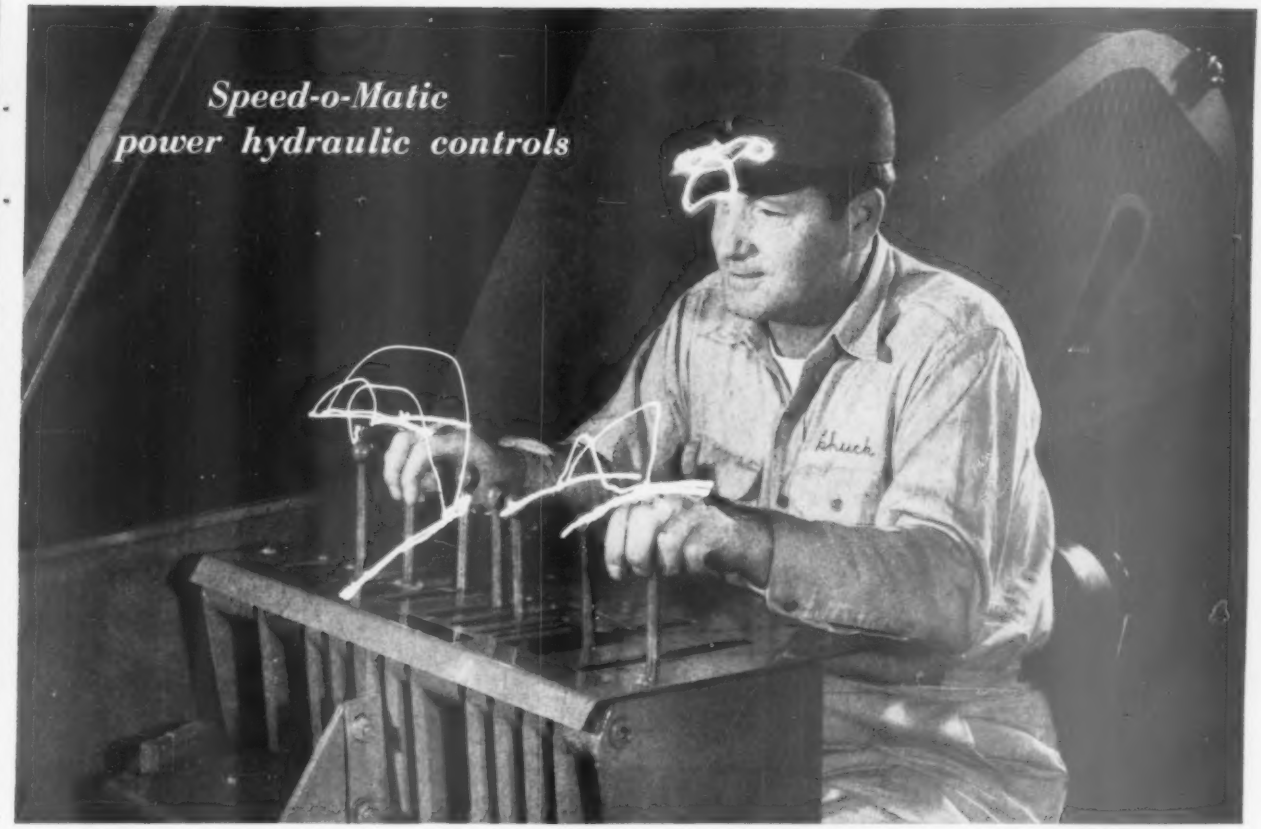
Follow the light lines. They show the "long reach" moves an operator makes with conventional controls to complete a hoe cycle, then shift from swing to travel, steer right and left and shift back from travel to swing. Such "arm's-length" work with slow mechanical or booster systems adds seconds to every move, drains operator strength, cuts end-of-the-shift output.

Time-light camera shows!

Which shovel-crane

Speed-o-Matic Power hydraulic controls increase output by decreasing cycle time and reducing operator fatigue

Speed-o-Matic controls bring pinpoint accuracy to dragline, shovel, clam, crane and hoe operations. Design eliminates over 150 mechanical parts from linkage alone. Hydraulically actuated clutches adjust automatically for heat and normal lining wear.



No reaching, no yanking . . . just easy, "keyboard" operation with Speed-o-Matic controls and Independent-Swing-and-Travel when performing the same operations as the hoe with conventional controls. Short-throw levers speed cycles, up output, conserve operator strength. Ask the man who has worked both controls. He'll pick Speed-o-Matic every time!

is producing more ?

Pushing a shovel-crane at its highest limit all shift long is easy with Speed-o-Matic power hydraulic controls.

That's because fingertip controls keep the operator fresh where long-throw levers multiply fatigue. And Speed-o-Matic—standard on all Link-Belt Speeder shovel-cranes—is the original fingertip, flick-of-the-wrist system.

Hydraulic pressure assures the same fast, smooth response *all day*, without adjustments . . . and with perfect feel of the load at every lever position.

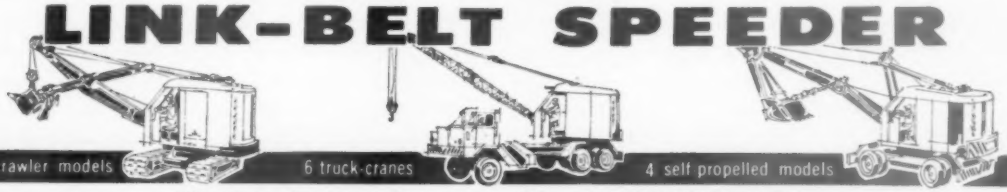
And Speed-o-Matic power-hydraulic controls are only one of many Link-Belt Speeder advantages. Others include—

- GREATER USABLE HORSEPOWER
- FULL-FUNCTION DESIGN tailors the machine to the job . . . permits more standard and optional features such as Independent-Swing-and-Travel.
- BONUS CRANE CAPACITY when using long booms at extended radii.

For complete details on why your best shovel-crane investment is a Link-Belt Speeder, contact your distributor or write LINK-BELT SPEEDER CORP., Dept. RP-358, Cedar Rapids, Iowa, for book 2553.

14,785

LINK-BELT SPEEDER



18 crawler models | 6 truck-cranes | 4 self propelled models

It's time to compare . . . with a Link-Belt Speeder

Enter 1114 on Reader Card

Semi-automatic crusher roll buildup takes half the time

Portable rig on truck is semi-automatic, is complete with power and oxy-acetylene tanks

Hard-facing *continued from page 112*

hard-facing alloys necessary to produce required deposit analyses, automatic hard-facing has almost wholly replaced manual welding in the rebuilding of crusher bowls, mantles and shells, house rolls, sheaves, crawler rollers and idlers. Alloy welding wires precisely adapted to practically all operations involving severe wear and impact are now available.

Hard-facing by the automatic method is suitable for the following equipment:

1—Tractor rollers and idlers
2—Scraper and dozer blades
3—Shovel idlers, rollers and house rolls
4—Roll crusher shells
5—Gyratory and Gyrosphere bowls, mantles and shafts
6—Cable sheaves

This list is not exhaustive, of course, but contains typical equipment used in most aggregate plants.

Crusher mantles and bowls are sometimes reclaimed after reasonable wear by building up with manganese wire and hard-facing with moderate or high chromium materials for added life; in many cases new crushers are hard-faced for maximum service and may be worn to destruction.

Many rock plant operations are big enough to make it worth-while to install full automatic welding equipment which may involve an outlay of $12,000 to $15,000. This is justified, of course, only where the company is operating sufficient equipment to keep the welding machine busy most of the time. More commonly the plant finds it most satisfactory to send such rebuilding jobs to custom automatic welding shops. In most areas of the country there are established shops properly equipped to handle this work; many repair departments of principal tractor equipment dealers are also undertaking this type of maintenance.

Please turn to page 119

PRODUCER

The Wemco Sandclone:

The Cyclone Unit for New Economy and Precision in Sand Preparation

The secret is in the design — the use of relatively low feed pressures in producing the high velocities needed for efficient separation.

Wemco Sandclone action is *positive* . . . assuring profitable production, precision separation of coarse and fine particles

Its operating economies: low inlet pressure and pump speed . . . minimum pump power and wear; high pressure molded rubber liners for long life.

Get *all* the facts — and the operating potential — of the Wemco Sandclone.

Depend on the Wemco Sandclone and the skills behind it

WEMCO®

Western Machinery Company • 650 Fifth St. • San Francisco, California
and throughout the world

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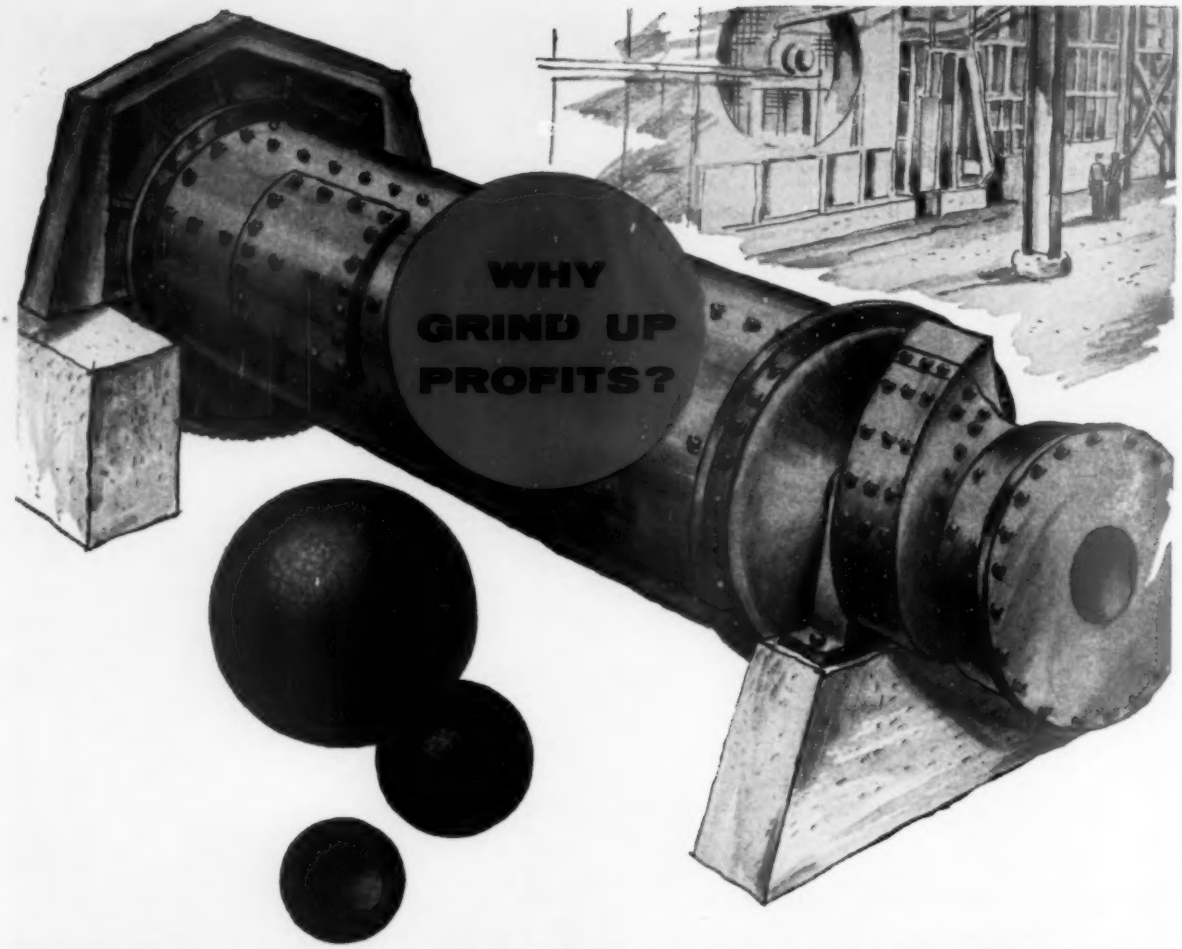


COATES INVITES COMPARISON . . . on the results of our studies of grinding-ball wear. Write Coates today for detailed research data. Make your own test . . . it can prove a profit opportunity for you.

Grinding balls are an important expense in your milling operation . . . now you can have new scientific proof of Coates Carbex Grinding Balls' ability to keep costs down and production up. In our continuing research to improve our product we recently had tests conducted of various types of grinding balls using a revolutionary new technique of marking samples invisibly. Ninety-eight per cent of the balls charged into an operating cement finishing mill were recovered and identified after thousands of gruelling grinding hours. Laboratory examination proved that Carbex Triple-Forged Grinding Balls, costing only a few cents per pound, showed little wear . . . were actually a much better buy than balls with slightly better performance which cost ten to twenty times as much.

Continuing research by Coates has produced a better grinding ball . . . low in cost, high in performance. Coates Carbex Triple-Forged Grinding Balls are rounder, hardened for performance, and toughened for stress by efficient modern methods. Specify Carbex balls, proven your best buy.

C958-1

Write for prices . . . All sizes—½" to 5" carried in stock for immediate shipment.

COATES STEEL PRODUCTS CO. CARBEX TRIPLE-FORGED BALLS

COATES STEEL PRODUCTS CO.

GREENVILLE, ILLINOIS

LARGEST EXCLUSIVE MANUFACTURER OF GRINDING MEDIA

Enter 1075 on Reader Card

Speedy semi-automatic job on shovel pads cuts down-time

Fully automatic hard-facing when crusher mantle is new means longer life

Hard-facing *continued from page 116*

The most recent development in the application of hard-facing alloys is the adaptation of the familiar semi-automatic welder to handle the same type of wires used by the automatic head. The only difference is that the wire for use through the semi-automatic machine is of smaller diameter. Here again there is a wide variety of analyses designed to provide the deposit properties required for different wear problems. For most applications the semi-automatic welder operates with the open arc, so that the welder may see his work at all times.

The semi-automatic machine itself functions simply as a means of continuously feeding the wire to the work, the arc being broken when the nozzle is withdrawn and struck again when welding is started.

- It has amazing speed of deposition, frequently surpassing even the automatic head.
- It has extreme portability, often being mounted with the power source on a truck to facilitate welding in the field.
- It is highly versatile, may be used for almost all hard-facing jobs.
- It makes economical, because of the speed of application, much work that would otherwise be considered impractical.

In maintenance shops where little hard-facing is done the investment of $700 for such a machine obviously is not justified, but where the work load is sufficient the welder will pay for itself in a short time. Simple rotating positioners to which the semi-automatic welder may be readily attached are available for converting the machine to an automatic operation for handling small cylindrical parts.

The value of the semi-automatic method is perhaps best illustrated in its frequent use on roll crushers. A great many instances have come to our attention in which portable crushers, operating under an extremely heavy work load in highly abrasive material, have their efficiency seriously impaired and cannot properly be maintained by the old-fashioned manual procedures. With the speed made possible by the semi-automatic, rolls can be rebuilt and hard-faced to keep pace with the metal loss which the rolls suffer.

The semi-automatic process has proven its usefulness in the field in countless applications. It is commonly used in the rebuilding and hard-facing of parts like these:

- Crusher jaws
- Impact breakers—rotors, bars, impellers
- Grizzlies
- Sizing screens
- Shovel, dragline and clamshell buckets and teeth
- Scoop loaders
- Shafts
- Tractor and shovel rollers and idlers

Please turn to page 140

By ROBLEY D. STEVENS*

Need new ideas?

Suggestion box is one answer

A SUGGESTION SYSTEM with rewards for usable ideas is not an employe benefit plan—it is a business venture that can pay off in operational savings, increased production and improved worker morale.

America is famous for its ingenuity, and suggestion systems enable employers to profit by their workers' inventiveness. Since the end of World War II, these systems have come into wide use because their real value to employers is recognized.

The employe may know the details of his job better than anyone else, including the supervisor or foreman. Often he may have ideas that nobody else has thought of about material handling, work improvement methods and other phases of his company's operations; but since the company has no recognized channel for making suggestions, he does not offer any. Some person in the company —usually the supervisor or foreman—should have the responsibility for receiving employe suggestions and ensuring they are properly considered.

And since rewards never fail to motivate interest, a definite amount of money depending on the value of the suggestion should be awarded.

Who will be eligible? Usually, all employes except technical workers and supervisors.

If an employe's suggestion involves a patentable idea the company should consult its own attorney for guidance.

A suggestion system is a management tool, and considerable benefit may be gained by companies that use it properly. Try it and see.

Here is a sample suggestion system:

ABC Company
suggestion system
Statement of Management Policy

As an employe of this company, you are invited to improve your job. In cooperation with your fellow-workers and your supervisor or foreman, you can help make this company a good place in which to work.

The broad objectives of this company's suggestion system are to encourage full participation and maximum effort by each employe; to encourage self-improvement and development; to help each employe assume more responsibility for efficiency and economy in operations and to recognize and equitably reward each employe who by his suggestion or idea helps the company.

You may submit your own idea or suggestion, with or without the help of your supervisor or foreman, simply by placing it in the suggestion box nearest you.

If your idea or suggestion is accepted for adoption, this company will award you a substantial cash prize. Since no reward is given for a suggestion until the proposal is accepted, it is recommended that your presentation be well thought out and that it be your best. If you believe that your ideas or suggestions will be of practical value to the company, you may submit as many as you wish. END

A typical suggestion form

THINK, ACT AND SUGGEST SOMETHING TODAY

Date_____
Suggestion Number
_____

Name_____
Position title_____
Department employed_____
Wage-salary rate _____
Length of employment_____
Name of supervisor or foreman_____
_____

The problem: (Describe situation which prompted your idea.)

Suggestion: (Describe your proposal: How can it be used and what will it accomplish in terms of saving money, time, manpower, materials or improving service, safety or morale?)

Is this your first suggestion?_____
Have you received a previous reward?_____
What department will your suggestion affect?_____
Is your idea practical for production purposes?_____
Other comments

I hereby agree that the use and acceptance of my idea and/or suggestion shall not form a basis for a claim of any nature upon my employer by me, my heirs or assigns. I understand clearly that my employer will reward me accordingly in his judgment if my idea is accepted.

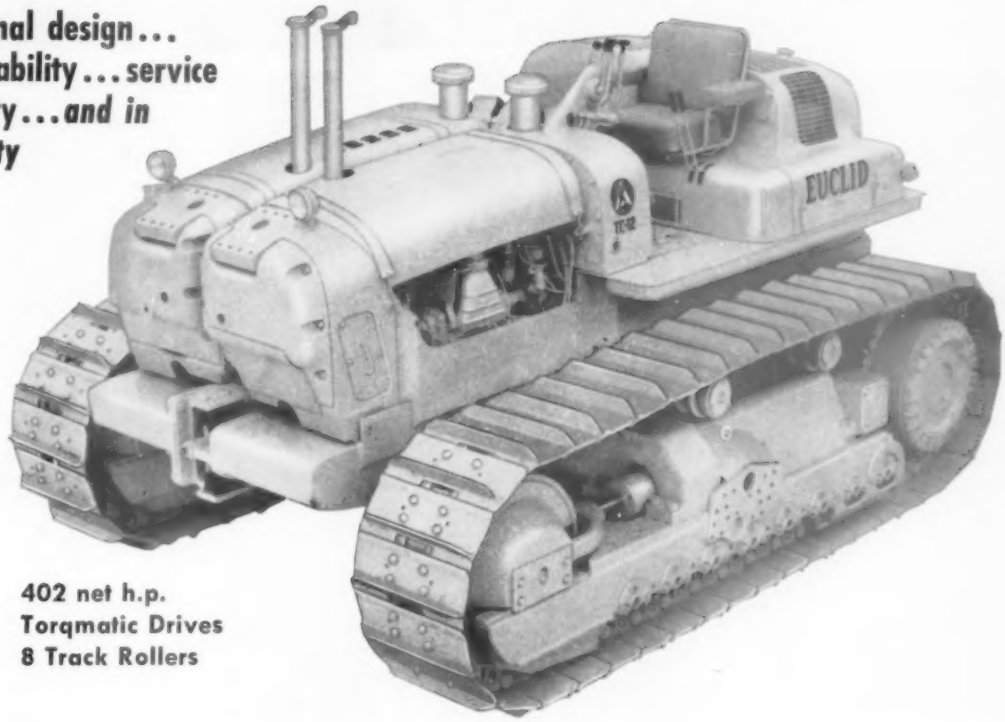
(signature of the employe)
_____

*Management consultant

New Series *Euclid TC-12* . . .

now even further ahead of other crawlers

in functional design... maneuverability... service accessibility... *and in work-ability*



402 net h.p.
Torqmatic Drives
8 Track Rollers

Ever since the TC-12 was introduced, there has been no question about its top performance ability —even on the toughest crawler jobs. Now with over 3 years of field experience on practically every kind of operation, major product improvements make the new TC-12 better than ever.

Powered by two engines, there's a total of 402 net horsepower delivered to the power train through separate Torqmatic Drives for each track. Big 27″ shoes and 8 rollers give the TC-12 good balance with or without heavy duty dozer blades and other mounted equipment. Bare weight of the tractor has been increased to 67,000 lbs. as a result of heavier construction and more rugged components throughout.

With independent track drives, there's no dead track drag when turning—maneuverability of the big TC-12 with its full power shift saves seconds on every cycle whether push loading scrapers, dozing or pulling big equipment. With unitized assembly, good design of component location and equipment mountings, this "Euc" provides easy accessibility for service and maintenance.

Have your Euclid dealer give you all the facts on the new TC-12 . . . you'll find its your best buy by far where big tractor performance is needed.

EUCLID DIVISION of GENERAL MOTORS, CLEVELAND 17, OHIO

GM GENERAL MOTORS EUCLID

EUCLID EQUIPMENT

FOR MOVING EARTH, ROCK, COAL AND ORE

Enter 1070 on Reader Card

Tuffy® Wire Rope

"Preventative Maintenance" Will Give You Longer Wire Rope Service

Every motorist knows the importance of proper lubrication for cars. It's essential for wire rope, too. For wire rope is a "machine" of precision moving parts. And friction is enemy No. 1 of all machinery.

Lubrication during fabrication

There are two distinct phases of lubrication: in manufacture, and in use. Wire rope engineers consider the lubricant as part of the rope; the kind, consistency and amount of lubricants are controlled and applied as required. Applications are usually made hot for the inside and external surfaces.

Lubrication in the field

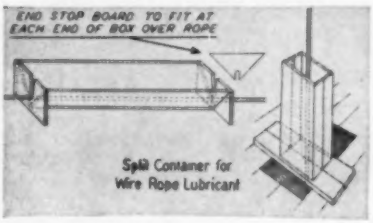
Here only an external application of lubricants is possible. It must penetrate to the inside of the rope to get a film of oil between the strands and the core. The lubricant can be applied either hot or cold, depending on its penetrating quality.

To find the best lubricant for your wire rope, talk to a local oil company engineer. He'll recommend the oil and method of application best suited to your needs.

How much and how often?

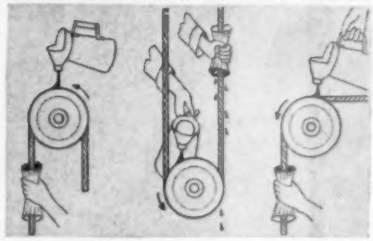
There's no set rule. It depends on service conditions. The heavier the duty, or the greater the number of bends, or the more corrosive the fluids in which the rope operates, the more frequent should be the lubrication. Remember one thing. The core is not an oil reservoir for external lubrication of the rope. No such action takes place. The oils "built" into the fiber core during its fabrication are to preserve and lubricate the vegetable fibers, not the external steel wires.

Two Types of "home-made" oiling devices



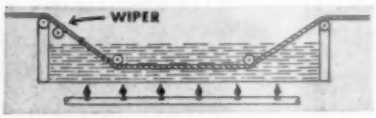
They're simple and do a good job. One is for vertical ropes, the other for horizontal. A heavy crankcase oil, cylinder oil or similar lubricant, preferably heated, is placed in the lubricators when the rope is run through.

Other Methods of lubrication



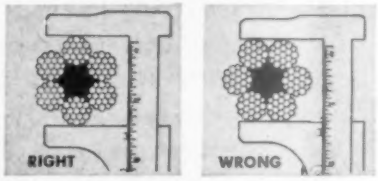
The pour-on method for manual lubrication is effective when penetrating, yet adhesive, oil is used. Oil should be hot. Hold the wiping swab BEHIND the sheave. This catches any excess oil that would be carried on along the rope.

Metal split box for bath treatment has a burlap collar or wiper at outlet end.



Hot bath method of applying heavier-bodied lubricant at high temperature. Gas burners or steam heat may be used. Pre-heated lubrication is always more penetrating. Rope should run through slowly to insure penetration.

How to measure rope diameter:



Use a machinist's caliper. Be sure to measure the widest diameter.

How to measure tread diameter:

Select smallest sheave or drum to be used with new rope, and measure actual diameter of tread.

Sheaves with grooves corrugated with rope lay impression should be replaced with new ones before installing new wire rope.

New ropes are usually over-size. It is advisable to have groove diameters of sheaves or drums as large as the actual calipered diameter of the new rope, or slightly larger. We recommend sizes as follows:

58-4

Tips

Recommended sizes:

Diameter of Rope	Minimum Dia.	Maximum Dia.
1/4-5/16	+ 1/64"	+ 1/32"
3/8 - 3/4	+ 1/32"	+ 1/16"
7/8 - 11/8	+ 3/64"	+ 3/32"
11/4 - 11/2	+ 1/16"	+ 1/8"
15/8 - 21/4	+ 3/32"	+ 3/16"
23/8 and larger	+ 1/8"	+ 1/4"

How to check groove diameter:

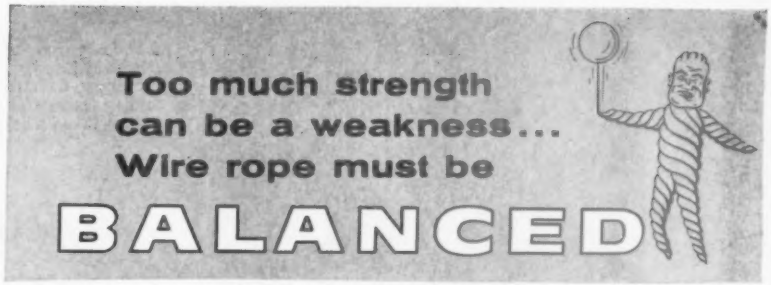
Ordering is ABC-Simple!

No complicated codes or long list of specifications. Just say "Tuffy," give type (Scraper Rope, Dozer Rope, etc.), length wanted and size. Just that easy!

Good Man to Know — Your Nearby Union Wire Rope Distributor

Whether your wire rope need is a scheduled replacement or a red-hot emergency, your Union Wire Rope distributor is ready with "right-now" service. He keeps varied stocks of Union standard constructions and the Tuffy Special Purpose Ropes. And he's backed by quick service from his nearby Union Wire Rope depot.

If it isn't rope you need, but advice on a wire rope problem, he's just as ready to help. If you don't know your Union Wire Rope distributor already, look under "Wire Ropes" or "Slings" in your telephone directory yellow pages.



Sometimes extra strength is heavily stressed in selling wire rope. While strength is important in every operation where wire rope is used, it is not the only important quality, and there are cases where excessive strength is a liability.

For example, the manufacturers of scrapers have designed the components of their equipment to take certain loads. These loads are controlled by or subject to the ultimate strength of the rope. Larger ropes with their accompanying higher strength do not break but *the equipment itself begins to* break up. Another feature of scraper rope is resistance to crushing. Strength is not the factor which controls the best design to resist crushing.

Union Wire Rope gives you the PROPER BALANCE of strength, toughness, flexibility and other properties most desirable for rope efficiency and long life. Don't settle for less. Your Union Wire Rope distributor has the BALANCED rope for every use.

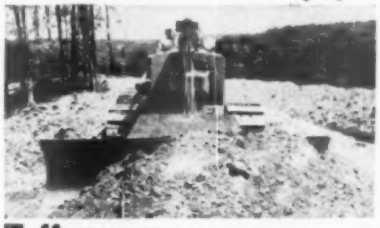
Special Purpose Ropes: tailored & BALANCED for special uses

Tuffy BALANCED Slings & Hoist Lines

Top-performing team in every type of materials handling. Tuffy Slings are made of a patented, machine-braided fabric; stays extra flexible, can't be seriously hurt by knotting or kinking. Tuffy Hoist Line is a special construction of super flexibility and toughness.

Tuffy BALANCED Scraper Rope

It's flexible enough to withstand sharp bends, yet stiff enough to resist looping and kinking when slack. Moves more yardage per foot because it's specially built and balanced to take the beating of drum-crushing abuse.



Tuffy BALANCED Dozer Rope

Built to give you longer service with less downtime. 150' reels of 1/2" or 9/16" mounted on your dozers allow you to cut off worn sections without wasting good rope. Put Tuffy Dozer Rope on the job and watch costs go down!

Tuffy BALANCED Dragline Rope

Made to give you maximum abrasive resistance with super flexibility. Rides smoothly on grooves; hugs the drum when casting for full load. Consistently dependable in handling any material — wet or dry dirt, sand, gravel, rock, cement or minerals.

union Wire Rope corp.

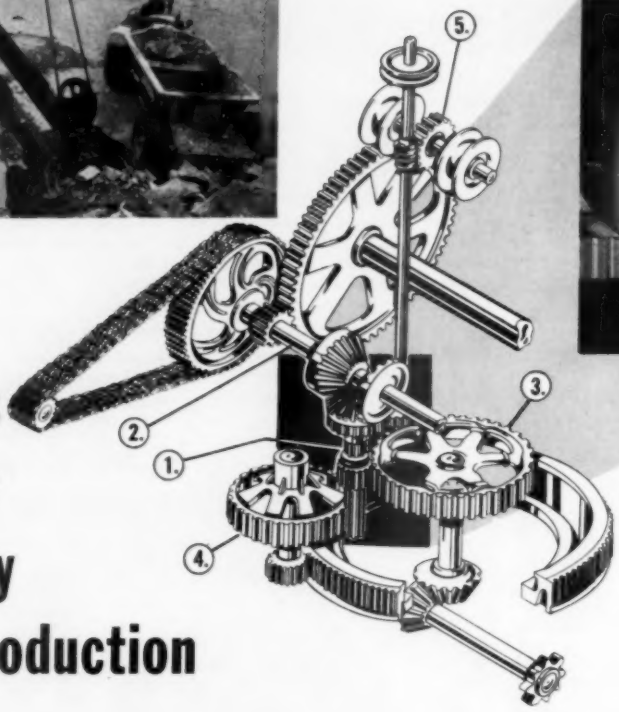
SUBSIDIARY UNITED STATES STEEL CORPORATION

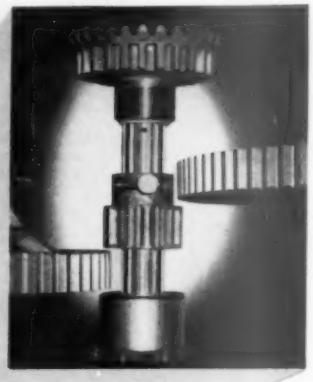
2156 **Manchester Ave.** **Kansas City 26, Mo.**

Specialists in high carbon wire, wire rope, braided wire fabric, stress relieved wire and strand.

Enter 1116 on Reader Card

A St. Louis quarry has greatly increased its output using this Model 3000 Manitowoc shovel equipped with a 2½-yard dipper. One of the most important factors contributing to the company's production increase is the Manitowoc "Power-flo" drive described below.





The key to Manitowoc's extra power is the key to top production

. . . and that extra power is provided through the *exclusive* Manitowoc "Power-flo" slide pinion arrangement that directs the full flow of engine power *only* to the function in operation. There are no power-robbing extra gears moving, even when not in operation (and gears that don't move don't wear out) . . . no complicated trains of gears that hold production down and keep maintenance costs up.

What arrangement could be simpler? As shown in the photograph above, the slide pinion itself is a single, sturdy shaft, spline-fitted with the necessary gears to engage, or disengage the desired function. The slide pinion (No. 1 on the drawing) is driven directly from the drive shaft (2) using only one set of clutches to drive the travel, swing and boom hoist.

With the slide pinion up, the power flows directly from the reversing clutches to the travel gear (3) through the center pin and to the horizontal shaft in the carbody.

With the slide pinion down, the power flows directly to the swing shaft (4) containing the final drive pinion, which meshes with the carbody ring gear.

With the slide pinion in neutral, the reversing clutch is left free to operate the boom hoist (5) if an optional independent boom hoist is not used.

The result is *direct* power to every function . . . a feature found in *Manitowoc* cranes, draglines and shovels. The faster cycle, heavier lifts and bigger bites found in Manitowocs are the direct result of this simple and effective "Power-flo" design. That's why output is *measurably* higher with Manitowoc . . . that's why it will pay you to see your Manitowoc dealer for complete information on the rig best suited to your operation.

Manitowoc

MANITOWOC ENGINEERING CORP.
(A subsidiary of The Manitowoc Company, Inc.)
MANITOWOC, WISCONSIN

CRANES	SHOVELS	DRAGLINES	TRENCH HOES
20 TON - 100 TON	1-YD. - 5½-YD.	1-YD. - 6-YD.	1-YD. - 2½-YD.

Enter 1088 on Reader Card

A new wrinkle in cement loading stations

USING THE LATEST pneumatic conveying equipment and modern dust-control machinery, a new cement distribution center in Montreal, Canada, is a model of clean, efficient operation. The bagging and bulk loading station, built in the spring of 1957, is operated by the St. Lawrence Cement Co., Ltd., of Clarkson, Ontario. The new storage and distribution station helps to alleviate the cement shortage in the Montreal area.

The St. Lawrence distributing center consists of two 150-ft. storage silos. These are served by a railroad spur for the hopper cars which bring cement from two St. Lawrence plants—one in Villeneuve, Quebec and one in Clarkson.

The site is also served by the Lachine Barge canal, and it is expected that cement will be brought by barge from both St. Lawrence plants before 1960.

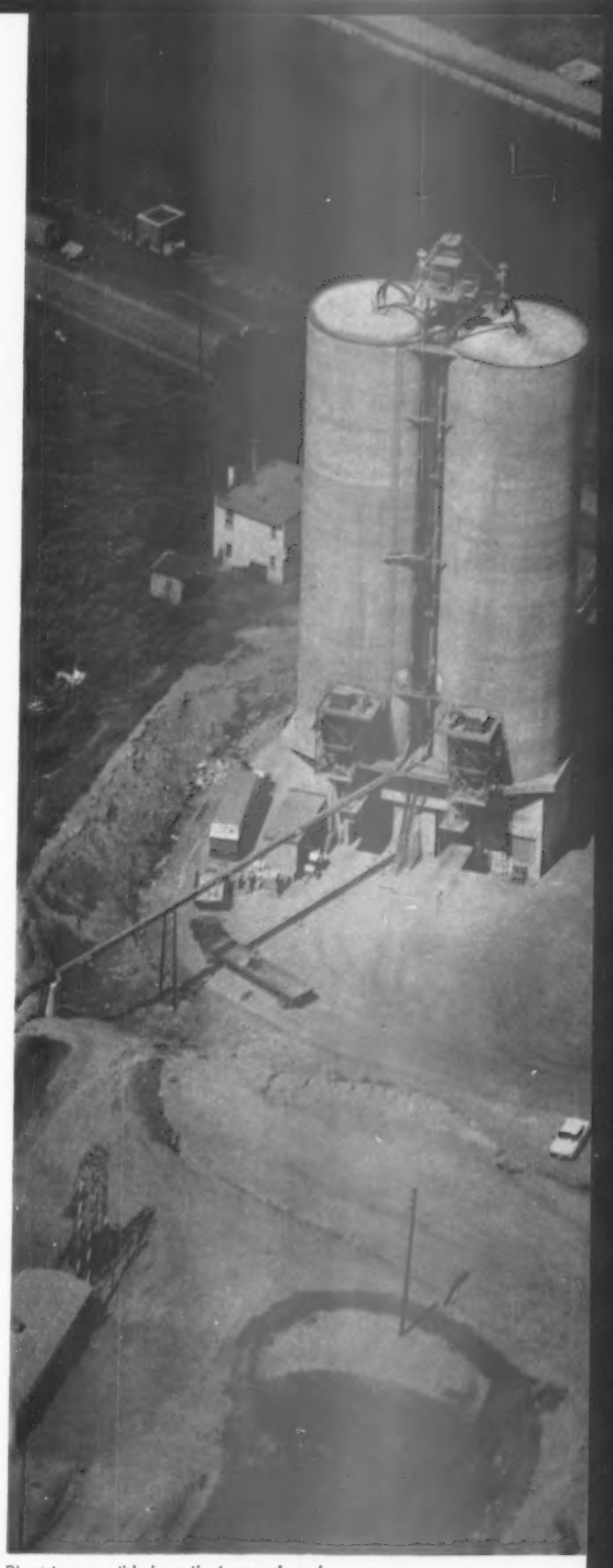
The railroad cars, each carrying about 75 tons of cement, are emptied at the silos into the pump system feed hopper. From there the cement is conveyed pneumatically to the top of the silos. Each of the two cement pumps in the pneumatic system has a rated capacity of 100 tph., and one railroad car can be emptied in as little as 30 min.

At the base of each silo is a bagging station and facilities for bulk loading of trucks. Two bagging stations are now in operation. Each packing machine can handle 1,250 of the 87½-lb. bags per hour. The plant is designed to handle a weekly output of up to 5,000 tons in bulk and bag cement.

The new bagging station uses high efficiency reverse-jet, fabric dust-collectors, which eliminate air pollution while recapturing valuable cement dust. In the St. Lawrence system, three fabric arresters have been installed. One is at the top of the silos—to handle air displaced while the silos are filling. The other two, near ground level, handle air from the bagging room and from the truck-loading station.

The three dust-collectors are 15 ft. high, with base dimensions 4 ft. 7 in. x 5 ft. 3 in., and each has a rated capacity of 6,000 cfm. Each contains 16 cotton filter bags, which are continuously and automatically cleaned. The dust discharges into hoppers fitted with rotary locks, which feed screw

Please turn to page 126



Plant is accessible by rail, river and road

Bagging station *continued from page 125*

conveyors to take the cement dust back to the silos. The primary exhausters are blowers run by 15 hp. motors.

These collectors, which maintain over 99.9 percent efficiency, use the principle of a reverse-jet air stream to prevent dust from caking inside the filter bags. Fewer bags are needed to handle larger volumes of air than in conventional fabric arresters. The collectors handle a dust volume of about 500 lb. per hour.

J. H. Chenard is superintendent of the new St. Lawrence station; the foreman is Jacques Pouliot.

END

Sand washing *continued from page 86*

long settling basins into which material is fed from the screening plant. Water flows from the feed end of the tank to the other end, and the heavier (and larger) particles settle out first. Successive settling all along the tank takes place as the particles become smaller and less dense.

Why is it that sizing tanks of this simple design have become popular only recently? There are two reasons:

1. They weren't necessary when only one size of sand, one that didn't have to meet tough specifications, was required;

2. Satisfactory means of discharging or drawing off the desired products have only recently been perfected to the point where they are economically feasible.

The scalping or classifying tank may be the least expensive and least complicated answer for the aggregates producer who finds it necessary to separate his sand into several sizes.

Apart from its use in multiple sizing, the scalping tank serves to eliminate surplus water prior to discharge of the product to a screw-type classifier. In this way, the amount of water entering the screw classifier can be better regulated for the mesh size of fines to be retained. A water scalping tank, then, will be followed by as many screw classifiers as there are sizes of sand products to be made.

The various products sized by the tank are discharged through valved ports on the bottom of the tank. These ports are spaced at intervals corresponding to the usual sizes required. Valves are air or hydraulically operated by electric controls and open when settled material reaches a predetermined height over the ports.

Sand with approximately 30 percent water is discharged into flumes under the tank; these flumes in turn discharge either into the screw classifiers or to waste. It is best to install at least three flumes. Combined with metering splitters at the discharge ports, these allow proper blending for production of at least two sizes of sand product and disposal of particle sizes not required.

Scalping tanks are provided with adjustable weirs to regulate the rate and velocity of overflow to provide the size separations required.

Sizers are tanks of somewhat more refined design. They are made up of a combination of cells into which successive settling by particle size and specific gravity takes place. Water is introduced at the bottom of each cell through nozzles which create a stream of rising water to produce what is called "teetering" or hindered settling of the particles. In each succeeding cell, the velocity of the water is reduced so that increasingly finer fractions are held in suspension. The fines not desired are classified out.

By keeping the particles in suspension, hindered settling creates a definite specific gravity (pulp density) in the hydraulic medium. As the pulp density increases with the number of particles in suspension, the hydrostatic head in the cell increases to a point where an indicator probe actuates an electric pressure control to open a plug valve in the bottom of the cell. When enough of the settled particles have been discharged, the pulp density decreases to a point where the valve closes.

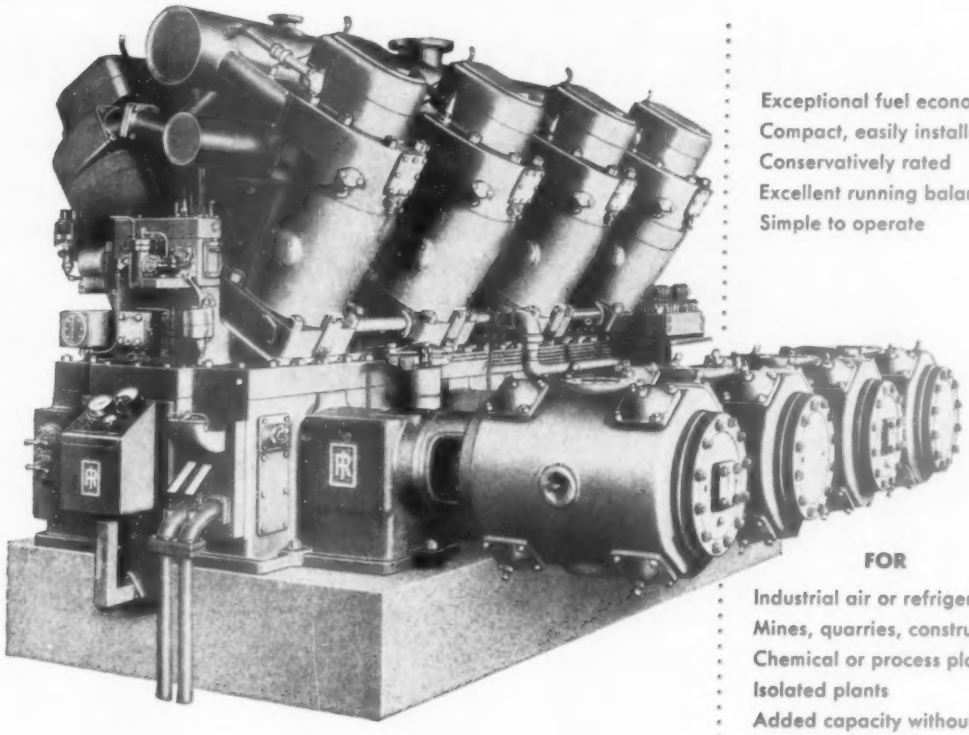
While the sizer is perhaps more accurate than a scalping tank in delivering a series of sharply graded sizes of sand, it has refinements of design not always required in the production of construction sands. Nevertheless, many commercial sand producers employ sizers of the type described in the preparation of blending sands.

Scalping or classifying tanks installed ahead of screw or drag classifiers are not the answer to every problem. When sand particles are coated with clays that wash off into colloidal suspension, the water may become so "heavy" that fines to be retained are washed out with the overflow. Some of the fines may be as big as 50 mesh. When this happens and these fines are necessary to the product, they will have to be collected from the overflow. The liquid cyclone classifier can be used for this purpose.

The liquid cyclone classifier is a unit principally utilizing centrifugal force rather than gravity. It has a round, tapering shell, properly lined (sometimes with rubber), and provisions for introducing feed and withdrawing overflow and underflow. It has a tangential feed pipe and an orifice plate supporting a vortex finder in the center, near the top.

Please turn to page 131

Ingersoll-Rand announces the SVO diesel-engine compressor



Exceptional fuel economy
Compact, easily installed
Conservatively rated
Excellent running balance
Simple to operate

FOR

Industrial air or refrigeration
Mines, quarries, construction
Chemical or process plants
Isolated plants
Added capacity without power demand

Integrally-built diesel-engine compressor provides unmatched operating economies!

The SVO is not an engine coupled to a compressor through power-wasting, space-consuming gears, but is an integral unit which combines a sturdy, low-speed, 4-cycle V-angle diesel engine with an efficient double-acting compressor on a single rugged frame with common crankshaft. It is the successor to Ingersoll-Rand's highly-successful XVO, which gained an unequalled reputation for dependability and economy in many years of service on numerous jobs.

The SVO is designed for continuous full-load compressor service at low cost. It is built in five sizes with 4, 6, 8, 10 or 12 power cylinders, for capacities from 1065 to 3200 cfm (at 100 psi). It can be furnished with compressor cylinders to handle air or gas at various pressures or vacuums. This machine will provide additional compressor capacity where electrical or steam generation facilities are already loaded or nonexistent, and is ideal for independent or isolated plants.

For full details, contact your local Ingersoll-Rand representative or write direct.

Only I-R compressors have CHANNEL VALVES

Known for high efficiency, quiet operation and exceptional durability. Entirely different. Each valve is a combination of rigid stainless-steel channels and leaf springs, with trapped-air spaces which cushion action, prevent impact.

Ingersoll-Rand

6-597

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4-CYCLE V

COMPRESSORS • GAS & DIESEL ENGINES • PUMPS • AIR & ELECTRIC TOOLS • CONDENSERS • VACUUM EQUIPMENT • ROCK DRILLS

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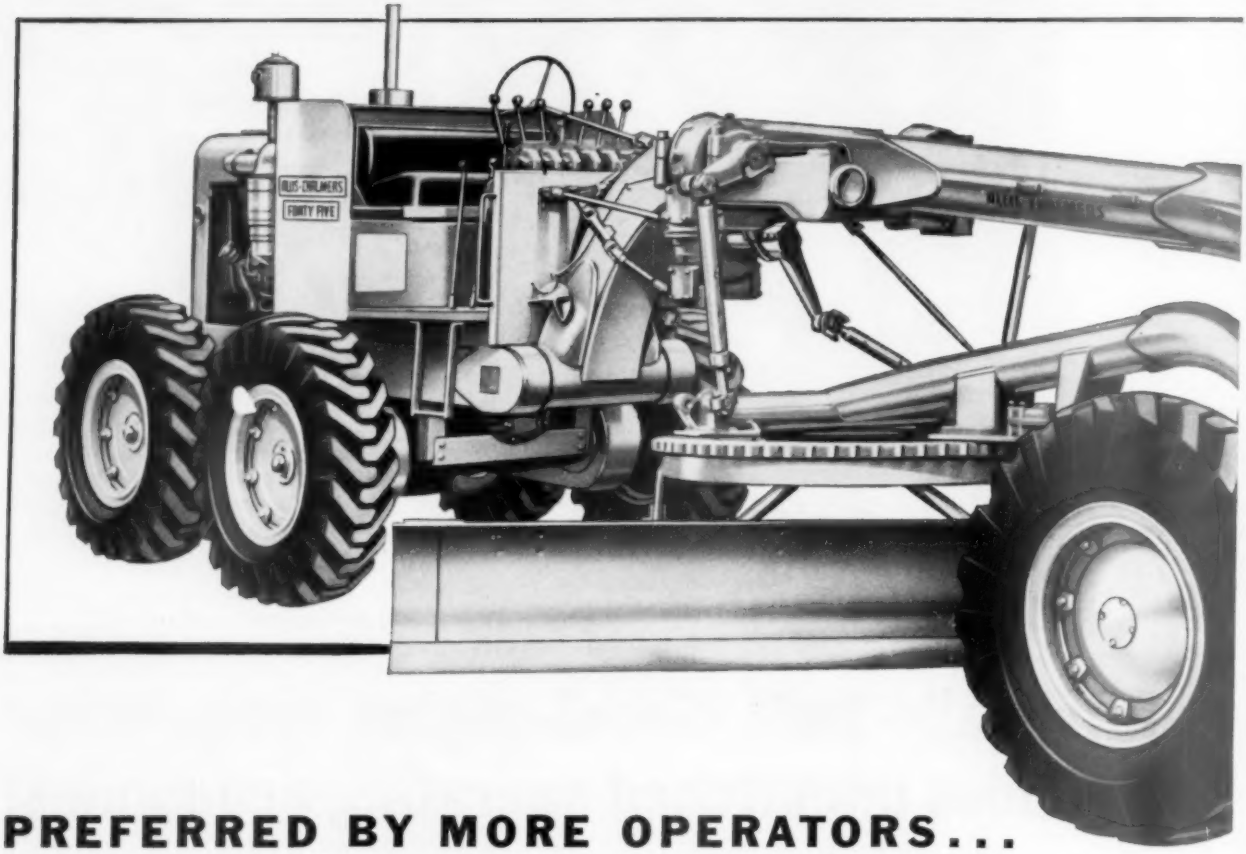
For consistently tough jobs, compare with any other heavy-duty motor grader



PREFERRED BY MORE OPERATORS... BOUGHT BY MORE USERS EVERY DAY

The FORTY FIVE has the power, weight, traction and speeds you need for high-production grading. Superior stability and precision control give you deep precision cuts or smooth finishes. The FORTY FIVE is built to take the shocks and strains of heavy-duty service — and to keep production steady. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.

Look ahead... *move ahead* ...and stay ahead with **ALLIS-CHALMERS**

Allis-Chalmers FORTY FIVE performance

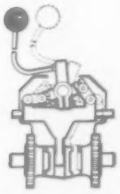
- 120 brake hp
- 6 forward speeds to 20.6 mph
- 3 reverse speeds to 7.0 mph
- 23,800 lb approx.

Advantages that mean more production . . . less maintenance . . . easier and better operation

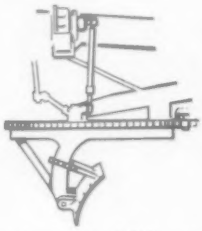
Extra high axle and throat clearance means bigger loads at the blade.

The ROLL-AWAY moldboard rolls dirt, gives more performance per horsepower, more production per gallon.

Fully enclosed power steering — easy control under all conditions.



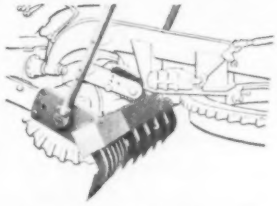
Toggle-type controls are exclusive with Allis-Chalmers.



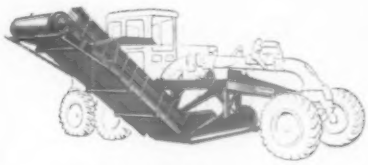
Front-mounted lift cases eliminate long shafts that twist under loads.

Matched attachments and accessories make it a year-round producer

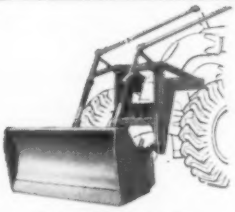
All-steel, stand-up cab



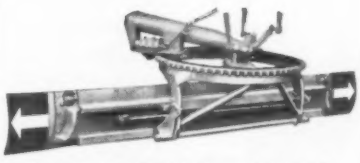
11-tooth, V-type scarifier



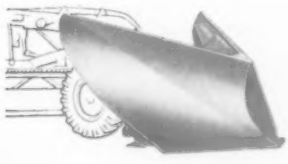
Hancock elevator



8-foot bulldozer



Hydraulic, shiftable moldboard



V-type snowplow

ROLL-AWAY is an Allis-Chalmers trademark.

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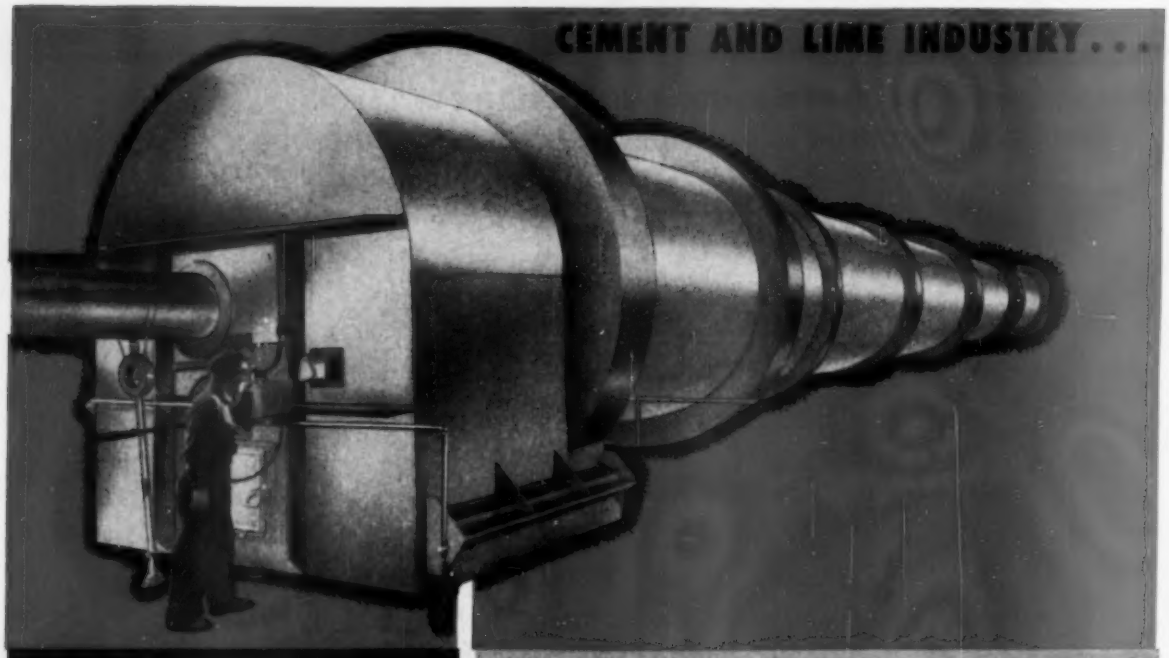
A. P. Green REFRACTORY PRODUCTS

A COMPLETE LINE OF REFRACTORY PRODUCTS FOR THE CEMENT AND LIME INDUSTRY . . .



80% ALUMINA
KRUZITE (70% Alumina)
MIZZOU (60% Alumina)
BIG CHIEF (50% Alumina)
KX-99
CLIPPER
A. P. GREEN HOT ZONE
EMPIRE

your assurance of MAXIMUM service at LOWEST cost . . . REGARDLESS of the operating conditions in your plant

In the cement and lime industry, operating conditions vary with each individual plant. Burning temperatures, chemical composition of the charge and many other factors influence the selection of the proper refractory material for a given job.

For half a century, the A. P. Green Fire Brick Company has been a leader in developing refractories to meet the exacting needs of the cement and lime industry. Your A. P. Green representative provides the engineering experience and knowledge, coupled with his complete line of A. P. Green Refractory Products, to give you a lining for maximum service at lowest cost.

Whatever your refractory problem or requirement, for specific recommendations without obligation to you, contact your local A. P. Green representative. You'll find him listed in the yellow pages of your telephone directory or write:

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PLANTS: Mexico, Mo. • Woodbridge, N. J. • Sulphur Springs, Texas • Jackson, Oak Hill, South Webster, Ohio • Philadelphia, Pa. • Troy, Idaho Pueblo, Colo. • Macon, Ga.

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DISTRIBUTORS IN THE PRINCIPAL CITIES OF THE WORLD

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Sand washing *continued from page 126*

The vortex finder may extend upward into an overflow chamber fitted with a tangential overflow pipe, or it may connect directly with a 90-deg. elbow of larger diameter.

At the bottom is an apex valve of either a tire type, inflated with air or water to close its inner diameter, or a disc type, regulated manually. Material to be recovered passes through the apex valve at the bottom. Single units can handle up to 1,400 gpm., depending on inlet pressure and desired mesh separation. The size of the fines to be recovered is regulated by the size of the opening or diameter of the apex valve. The feed, sand and water, is delivered by a pump. A 24-in. cyclone, with 4-in. slurry pump, delivering feed at 18 to 20 psi., should be suitable for most sand recovery applications to recover minus 100 mesh.

A number of other types of units are used in the hydraulic preparation of sands, but not all of them are applicable to the production of construction sands. Those most likely to be used in more or less specific instances are briefly described here.

The hydro-classifier or bowl classifier provides additional settling area at its feed end and is capable of handling large volumes of water while delivering a well-drained, finished sand. Its primary function is the separation of sand in the extremely small mesh sizes.

The hydroseparator, augmenting the hydro and bowl classifiers, handles exceptionally large volumes of flow and makes a preliminary separation of sand and silt prior to final classification. Single units may handle as much as 1,000 tph. of sand. Since it is primarily a desliming unit, there is no particular regard for separating efficiency in its

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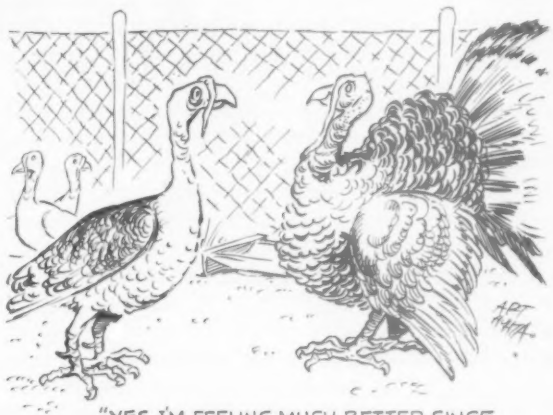

Sand washing *continued from page 131*

design. In a hydro-classifier, the primary element of control is dilution—the higher the ratio of liquid to solid, the finer the overflow. In a hydro-separator, the primary element of control is the velocity of flow—the more rapid the flow, the coarser the overflow product.

The thickener is a deep, round settling tank usually used to continuously collect settled fine solids and to convey them to a central point of withdrawal. It receives overflows from classifiers and hydro-separators, removes silt and clay, and produces a clear effluent that may be either returned to process or safely discarded. The thickener works best where the ratio of suspended solids to liquid is comparatively large and where solids discharged will have a moisture content as low as practicable.

The major product is generally the underflow, which is usually handled by a discharge pump. Thickeners often take the place of settling ponds, so that effluent can be reused in further processing of washed and cleaned sands. Thickeners are frequently used to clear up the waste water so that it can be discharged into a river, stream or lake without pollution or the formation of "deltas" of waste material. END

Alpha plant *continued from page 109*

and controlled by remote controlled feeders. The laboratory makes constant checks at every stage of the slurry grinding and storage process to maintain the mix at an exact composition.

Big storage areas at every stage add to the efficiency of the plant. More than 100,000 bbl. of clinker can be accumulated and stored under roof, to await the next step—grinding to cement. After grinding, a battery of 18 giant concrete storage silos holds more than 300,000 bbl. of cement. These silos give this cement mill the capacity and the flexibility to store and ship a dozen different types and grades of cement to a highly competitive market rapidly and efficiently.

Finished cement is taken from any one of the 28 x 100-ft. storage silos and conveyed to one of the three 4-compartment shipping silos. Each of these silos is divided into quadrants to hold four different kinds of cement without the possibility of mixing or contamination. The three silos are fitted with two Airslides arranged to load three gondolas and one truck simultaneously—said to be one of the swiftest and most effective cement loading docks in the country. END

From TEXAS to CONNECTICUT . . .

Repeat owners get steady pit output from Bucyrus-Erie shovels . . . You Can, Too

These experienced quarry operators prove their satisfaction in Bucyrus-Eries with repeat purchases. They buy another on the strength of past performances of quality-built Bucyrus-Eries already setting new output standards in their pits.

Look over these on-the-job illustrations and check the comments. Then investigate WHY a Bucyrus-Erie shovel provides more working time each hour of every shift . . . more daily output. Your nearby Bucyrus-Erie distributor will gladly help you select the right size machine for your pit — capacities range from ⅜ to 4 cubic yards.

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BUCYRUS ERIE

A Familiar Sign at Scenes of Progress

BUCYRUS-ERIE COMPANY • SOUTH MILWAUKEE, WISCONSIN

"Obviously, we're satisfied," states the superintendent for New Haven Rock Co., New Haven, Conn. "The 71-B was bought on the basis of performances of our 38-B and 54-B." The 3-yd. shovel works in the Reeds Gap quarry near Wallingford, loading blasted rock for hauling to the crusher plant.

"We bought our third Bucyrus-Erie 22-B on the basis of the past performance of our five-year old 22-B," says K. R. Farquhar, quarry owner, Clinton, Iowa. "That's proof enough of our satisfaction." Farquhar shifts his three ¾-yd. shovels from pit to pit, as needed, in a widely scattered operation. Here, two machines are loading limestone in the Clinton pit.

"Satisfactory in every respect" is the report from Simpson Stone Co., Clarksville, Tenn., on their 1½-yd. Bucyrus-Erie 38-B. It loads granite-like limestone, including frequent removal of large boulders. A ¾-yd. 22-B is also used in this Clarksville pit.

"We bought the 71-B after such good operation of our 54-B and five other Bucyrus-Erie machines," comments C. R. Roth, plant engineer, Servtex Materials Co., New Braunfels, Texas. "We had the 54-B for seven years in rough work with very little trouble." The 3-yd. 71-B works in the quarry loading trucks with stone for the crusher.

These engine users save money with Allis-Chalmers low maintenance...

24 engines average over 5,000 hours before overhaul

Allis-Chalmers engines in 24 trucks hauling ore at a large western copper mine average over 5,000 hours of operation before overhaul. Many have given more than 20,000 hours of service and are still "going strong."

BC-20

Has gone 7,000 to 8,000 hours since overhaul

The Allis-Chalmers 6DC1879 in this Bucyrus-Erie dragline at an eastern plant has had but one overhaul since it was new in 1949, and has gone another 7,000 to 8,000 hours since then. It keeps a fleet of about 40 trucks moving at about 10-minute intervals.

No repairs in 6,000 hours

This Koehring dragline works 10 to 24 hours a day for its Louisiana owner. It is powered by an Allis-Chalmers 1879 that has had no repairing since it was new, over 6,000 hours. The operator reports, "I haven't had a minute of downtime."

...you can, too!

One reason Allis-Chalmers engines *earn* more, *save* more is because they are on the job *working* more of the time.

Their rugged, simple construction results in a minimum of maintenance. Parts are fewer and stronger — that means less wear, less that can go wrong.

"Clean," simple design naturally means easier servicing, too. And you are always close to fast parts and service, wherever you are. Result: Allis-Chalmers engines are back to work quickly. See your dealer for the full story of Allis-Chalmers' dependability and economy. Allis-Chalmers, Milwaukee 1, Wis.

ALLIS-CHALMERS

***POWER* FOR A GROWING WORLD**

Quartzite *continued from page 81*

ready for any market which can be found for it.

Flow of material in the secondary screening tower is split between a pair of 5 x 12-ft. double deck vibrating screens. The top decks scalp off oversize which is dropped to a 4¼-ft. cone crusher to be recycled back to the top of the secondary screens. Heavy ballast is taken out on the bottom decks, which produce about 200 tph. of the 1¾ x ⅜-in. size. Through-screen rock drops to two 4 x 10-ft. vibrating screens which remove dust to make the ⅜ x No. 16 ballast. About 75 tph. of fine ballast and about 25 tph. of dust are separated on this screen. The dust is conveyed to a remote storage pile where wind-blown material cannot contaminate the finished materials.

The screening and crushing plant is on a plateau more than 100 ft. above the tracks, which are in the bottom of a ravine. A wide shelf carved into the solid rock between the track and the sheer face of the cliff makes an abrasion-resistant storage bin with a capacity of nearly 50,000 tons of finished ballast.

The belt conveyors carry finished materials to the rim of the cliff and discharge over the edge to form storage piles. Additional piles could be made by simply installing belt conveyors from the screening tower to the edge. The storage capacity of the plant could be increased in this way, or additional sizes of stone could be made and stored.

Each of the two storage piles has a reclaim belt conveyor to take ballast from hand-operated gates to the shipping bins over the tracks. On an average day during the shipping season from April to November, forty 50-cu. yd. capacity cars of premium grade ballast are delivered to track crews on the North Western system.

The reballasting program of the far-flung North

Please turn to page 136

MAJOR EQUIPMENT USED BY ROCK SPRINGS PLANT

In quarry:	
Churn drill, 11 in. (2)	Bucyrus-Erie Co.
Shovel, 2½-cu. yd.	Northwest Engineering Co.
Crane for drop ball	Northwest Engineering Co.
Bulldozer, D8	Caterpillar Tractor Co.
Haulage trucks, 22-ton (3)	Euclid Div. GMC
In processing plant:	
Apron feeder, 5 x 18-ft.	Pioneer Engineering Works
Primary screen, 5 x 12-ft.	Pioneer Engineering Works
Primary jaw crusher, 60 x 48-in.	Allis-Chalmers Mfg. Co.
Gyratory crusher, 20-in.	Allis-Chalmers Mfg. Co.
Cone gyratory crusher, 4¼-ft.	Nordberg Mfg. Co.
Secondary screens, 5 x 12-ft. (2)	W. S. Tyler Co.
Secondary screens, 4 x 10-ft. (2)	W. S. Tyler Co.
Belt conveyor system	Barber-Greene Co.
Design and layout	Foley Bros., Inc.
Construction and operation	Foley Bros., Inc.

Quartzite *continued from page 135*

Western system will take years to complete. The supply of tough, durable red quartzite on the 75 acre tract is practically inexhaustible; more than 50 million tons is available above track grade, enough for years of quarrying.

As the ballast production increases, the pile of waste dust mounts steadily. While it can always be used as fill along the railroad right of way, more profitable uses are being explored; as asphalt filler, grinding and blasting sand, concrete sand. The railroad is finding other profitable uses for the fine ballast in its maintenance program; as parking lot base and as first class aggregates for concrete and asphalt construction. **END**

MgO content *continued from page 87*

part of the MgO. The remaining MgO is assumed to be unhydrated.

The test method developed by the bureau involves the forced hydration of the unhydrated MgO by high-pressure steam in an autoclave. Each water molecule that the lime acquires during autoclaving results from the hydration of one molecule of free oxide. If the same assumption is made as in the standard chemical-analysis method—that the CaO is already completely hydrated—only the free MgO can be responsible for the gain in water. By determining this gain, the amount of free MgO can be easily derived.

To ascertain the increase in water, the lime must be dried before and after hydration to the same degree of dryness. In addition, carbonation must be carefully avoided, since a weight gain due to carbon dioxide would lead to serious error. A carbon dioxide-free drying apparatus of simple design was developed, consisting of a small desiccator placed in an oven maintained at 120 deg. C. A hole in the desiccator cover is fitted with a two-holed rubber stopper. Compressed air is taken in through a reducing valve and passed through a system made up of a gas washing bottle containing concentrated sulfuric acid and a drying tower containing ascarite and magnesium perchlorate. The dry, CO_2-free air then passes through copper tubing into the desiccator, through one of the holes in the rubber stopper. The desiccator is vented through the other hole. Copper tubing coiled within the oven provides flexibility and easy manipulation of the apparatus.

The sample being investigated is dried in this

Please turn to page 139

USS Forged Grinding Balls

hit a new high in performance!

New manufacturing facilities at U. S. Steel have now made possible forged steel grinding balls with three outstanding characteristics:

HARDNESS

The hardness patterns obtained in USS Grinding Balls assure superior grinding qualities and long service life in all types of grinds.

TOUGHNESS

To resist breakage, each size and type of USS Grinding Ball has the maximum toughness compatible with its depth of hardness.

UNIFORMITY

The exacting controls that are necessary in processing, particularly heat treatment, combined with frequent laboratory checks, insure consistency in quality—ball to ball and load to load.

There are two types of USS Forged Steel Grinding Balls available: USS Carbon-Manganese, for most mill operations, and USS Alloy Steel, for unusually severe grinding conditions. Both types are manufactured in the same sizes: ¾″, ⅞″, 1″, 1¼″, 1½″, 2″, 2½″, 3″, 3½″, 4″. To find out what makes the "good" grinding ball *you* need, send for our new free booklet, today. Just fill out and mail the coupon.

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The progressive six-state territory served by the Norfolk and Western contains virtually inexhaustible supplies of limestone for the production of cement, building stone, and other construction materials.

Recent geologic surveys in N&W territory prove there are more than 100 million tons of high-grade limestone in a single deposit! An added advantage is the fact that much of the limestone is situated for economical mining or quarrying . . . and dependable N&W transportation is nearby.

Manufacturers of limestone products seeking new plant sites, as well as construction firms planning operations in or near *The Land Of Plenty*, are urged to give this vast source of premium limestone their careful consideration. Detailed factual information will be supplied promptly, and confidentially . . . without obligation.

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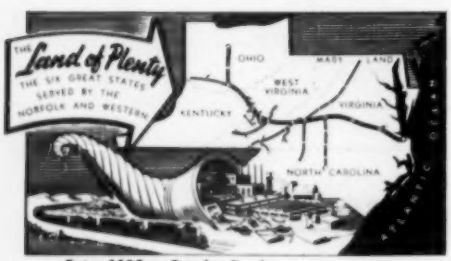
Industrial and Agricultural Dept.
Drawer RP-806 (Phone Diamond 4-1451, Ext. 474)
Norfolk and Western Railway
Roanoke, Virginia



Norfolk and Western RAILWAY

For quick, competent assistance on shipping problems — talk with the N&W freight traffic Sales and Service representative nearest you . . . in one of 39 key cities across the U. S.

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MgO content *continued from page 136*

apparatus, cooled and weighed. It is then placed in an autoclave and subjected to saturated steam at a pressure of 295 psi. for one hour. After a second drying it is cooled and weighed again. The increase in weight, which is the difference between the oven-dry weights before and after autoclaving, is assumed to be due entirely to the gain in water, and is multiplied by a conversion factor to obtain the weight of free magnesia in the sample.

Duplicate tests were made by the forced-hydration method on 14 hydrated dolomitic lime samples. Comparative data were also obtained on the unhydrated MgO content of the same limes by the standard chemical-analysis method. No significant difference was noted between the free MgO values obtained by the two methods. However, the results obtained by the forced hydration method were reproducible with considerably greater precision than those obtained by the standard chemical-analysis method. END

Television *continued from page 77*

grinding, which enables the plant to take care of special high demands on either side. Each mill is powered by a 1,000-hp. motor.

Remote control of cement withdrawal from storage silos and diversion to different loading points is provided by a master control panel with a graphic illuminated flow diagram. The 36 silos have a capacity of 10,000 bbl: each, and 18 interstices are also used for cement storage. A remote control console for the railroad bulk-loading station is located in the weighmaster's room. After

STOP
Have you read the editor's message on page 17? You should . . . it has special meaning for you

the silos and the conveyors have been selected on the master control panel, the control console in the weighmaster's office takes over the automatic filling of the bulk tanks.

Two Airslides, each with a capacity of 2,000 bbl. per hour, are available for car loading. Cars can be loaded on scales. The loading hood is controlled from the operator's station. The packhouse has a motion detector on each conveyor with audio-visual alarm close to the master control panel.

The Mojave plant was designed by the engineering staff of the California Portland Cement Co. and the Donald R. Warren Co., and was constructed by the L. E. Dixon Co. of Los Angeles.

Hard-facing *continued from page 119*

Two suggestions are in order for the maintenance of all equipment that can be rebuilt and hard-faced for further use. First, the economical rebuilding of all types of equipment can be made easier, with far greater savings, if such parts are inspected at frequent intervals and wear is carefully noted to make certain that the part is taken out of service before destructive wear takes place.

Second, most plants with a carefully considered maintenance program have found that complete sets of replacement parts kept in stock, ready for immediate installation, result in considerably lower production costs through reduced down-time. As worn parts are removed from operating equipment they are sent to the shop for rebuilding and reconditioning when time allows, and thus can be conveniently worked into the schedule of the welding crew. As soon as these parts are ready for service they can go back to stock for use as replacements when required.

What material, what hard-facing alloy, performs best under a given set of circumstances? Unfortunately there is no ready answer that will apply in all cases; even a slight difference in operating procedures and, in the case of crushers, the type of material being handled, will dictate the alloy to be used. Only field tests under actual operating conditions will be conclusive, although the recommendations of manufacturers of hard-facing alloys may ordinarily be accepted as a safe guide.

END

Disintegrator *continued from page 102*

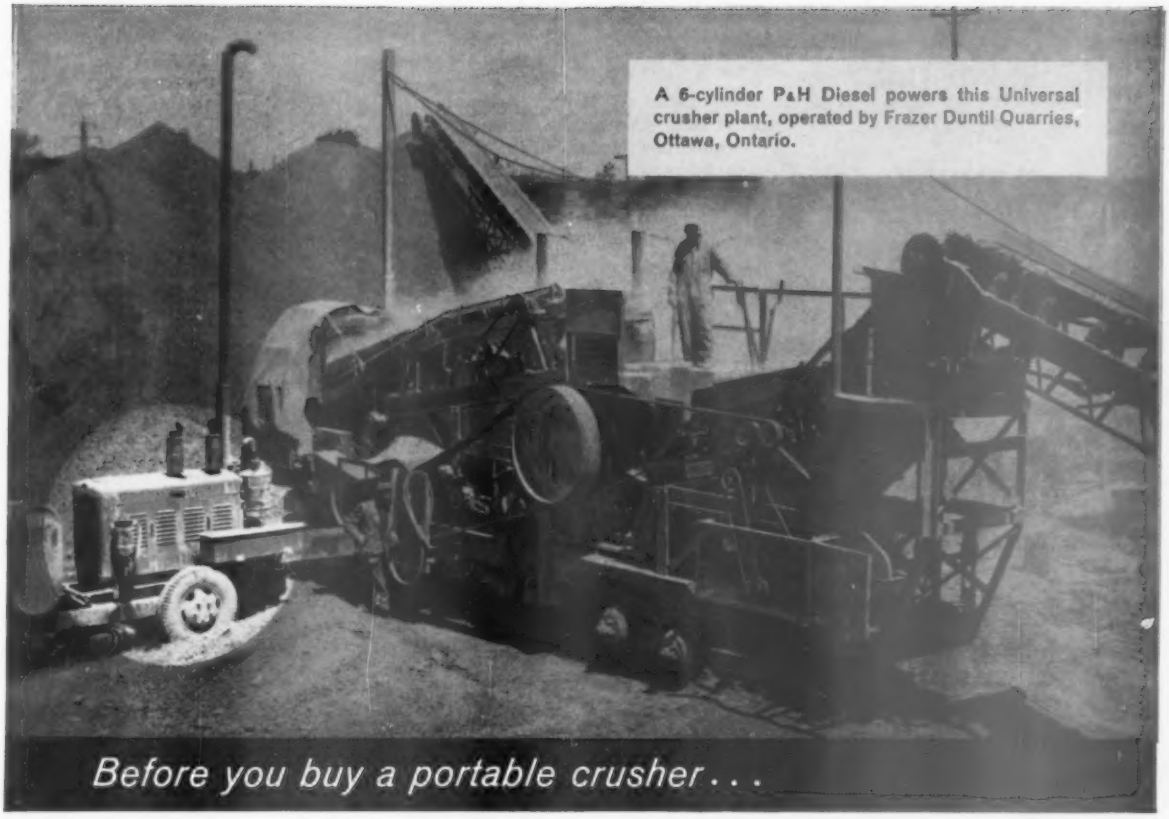
The man responsible for the arrangement of crushers, screens and jigs to upgrade the gravel deposit is Truman A. Dunn, plant superintendent.

The jigs do an excellent job, but Mr. Dunn's eye for efficiency has noted several ways of improving his layout. "If I were doing it over," he says, "I'd have my surge hopper and feed gate right over each jig." In this way, the operator could immediately make the small changes in the feed rate to keep the jigs operating at top efficiency. As it is, each change means a 100-ft. trip back over the conveyor bridge to the storage hopper gate.

END

Toll road policy

"FEDERAL POLICY ON TOLL ROADS," a report by the research department of National Highway Users Conference, Inc., reviews the legislative history of the federal policy on toll roads.



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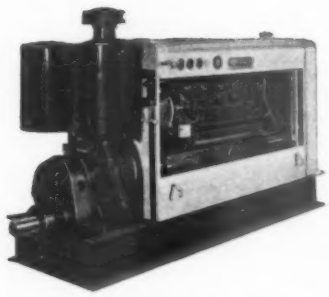

6-cyl. P&H Diesel Power Plant with Cotta transmission and extra heavy duty "dual-type" air cleaners. P&H Diesels available in 2, 3, 4 and 6 cyl. models ranging from 40 to 280 H.P.

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2. EASIEST TO OPERATE—Responsive P&H Diesels have the most modern and simplified fuel injection system in existence—built around the famous Roosa-Master pump. They start faster—idle better—*one adjustment times the entire engine!*

3. EASIEST TO MAINTAIN—The P&H Diesel has 25% fewer parts and all wearing parts are completely interchangeable. You can even remove a complete "Unitized" P&H power assembly—and replace it with a new one—in less than an hour . . . without removing the engine from its mounts.

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HARNISCHFEGER

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Crystal Lake, Illinois

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ROCKY'S NOTES

(Continued from page 18)

some of these materials were much better than others, but since construction materials in particular were much used by public authorities and must be obtained through competitive bidding, there necessarily must be some standard requirements other than the manufacturers' claims or guarantees.

The portland cement industry was perhaps one of the first to awaken to the significance of this move. Cement manufacturers obviously could not permit a group of engineers and college professors to know, or profess to know, more about their product than they themselves did. Moreover, they could not allow such a group to write specifications without knowledge of the manufacturing and economic problems involved in meeting the specifications that might be written. Thus, we believe their original motive in taking part in the activities of the ASTM was largely defensive. We must remember, too, that at the time there were not many real scientists or technically educated men employed or connected with the cement industry. There were indeed a few and they took a leading part in convincing the others—and it took time in most instances.

There were also, and still are, very sound commercial reasons for such an affiliation between user purchasers and producers, not the least of which is the opportunity for publicizing a product in avenues where it will do the manufacturers the most good. Quite naturally, too, a part of such publicity has been to combat unfavorable data and opinions published from time to time by users and experimenters. So, we are afraid it will have to be admitted that many experiments and tests were not conducted primarily as basic research or even with basic research in mind, but to serve more immediate ends. Nevertheless, however accumulated, such data—if honest—have proved useful and eventually may prove more so in genuine research to gain the truth about cement and concrete. It has obviously produced new scientific facts for use in the design of concrete and concrete structures.

The cement industry was gradually led into basic research, although the foundation for such research was done without reference to portland cement at the Geophysical Laboratory of the Carnegie Institution in 1906 in connection with studies of the origins of igneous rocks, especially silicates. From that beginning, through some genuine basic research the industry has gained as much knowledge of the constitution of portland cement clinker as is possible until the new science of structural inorganic chemistry can be applied to determine the actual structure of a particle of clinker. Even then it is probable that no two grains of clinker will have identical structures. By basic research on hydrated cement as a colloid some discoveries have been made that show truths of colloid behavior in general apply. Other scientific developments, such as the water-cement ratio, fineness modulus, air entrainment and the theory of cement-alkali-aggregate reaction are the empirical results more of experience and tests than of basic research. That is, experiences observed in practice were merely confirmed in the laboratory and hypothetical causes assumed. The real truth about alkali reaction is probably deeper and simpler and depends on the circulation and fixation of positive and negative charged ions —a law that applies to any mineral under the same circumstances.

Were research in the portland cement industry conducted as it has been in some other chemical industries, more attention would have been devoted to developing new and revolutionary processes of achieving the results desired. If a correctly proportioned mixture of tricalcium and dicalcium silicates is the only product desired, there are undoubtedly more direct methods of obtaining it, than the present crude and largely unpredictable processes. With the rapidly developing knowledge of producing reactive silica, the future holds a possibility of a process in which only lime and silica may be employed, possibly through the medium of some cheap, recoverable catalysts. Then by correctly proportioning the tri- and the dicalcium silicates, a cement of any desired properties might be produced. Naturally, an industry with many hundreds of millions of dollars invested in present processing equipment will not voluntarily and cooperatively engage in this kind of basic research, which has rendered so many other chemical processes obsolete.

The development of research programs in the lime, aggregates and concrete industries has had, according to our observation, a similar history. The present younger generation of producers and manufacturers probably no longer questions the value of such research programs, but their fathers often did. They had to be "sold" largely by the kind of arguments we have mentioned above. Because aggregates are natural products and little or nothing can be done to change some of their characteristics, a great deal of

(Continued on page 144)

PUT YOUR OWN "OPERATION EFFICIENCY" TO WORK WITH SECO SCREENS

"OPERATION EFFICIENCY" Coast-to-Coast, profit-minded producers are revaluating their methods and their equipment with the objective of offsetting rising costs through more efficient operation. How about you, Mr. Producer? Since vibrating screens are the heart of your preparation plant, you simply can't afford to operate with obsolete or unsatisfactory equipment. And when you're buying NEW screens, we believe it will pay you to get SECO screens on your job. Check every one of the five solid reasons discussed below. Here is straight line thinking to help you put your own OPERATION EFFICIENCY to work for you . . . and increase your profits.

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ENGINEERED STAMINA FOR VOLUME AND LONG LIFE

For over a quarter of a century, SECO has specialized in the design and manufacture of vibrating screens exclusively. This specialization means better design, more rugged construction and longer life for SECO users. The first SECO screen ever built is still in service.

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Pictured here is the SECO parts department. From here highest quality genuine standard factory parts orders are rushed by the fastest means possible the same day they are received. This is another example of SECO'S continuing desire to help you get the most from your screens . . . with minimum down-time.

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ROCKY'S NOTES

(Continued from page 142)

the experimenting and investigating has had to be done on more complex construction materials such as cement concrete and bituminous pavement mixtures, in which the aggregates are used. While much of this work has likewise been defensive, it has resulted, in the hands of really research-minded men, in useful scientific facts for the design of concrete and in the design of pavements.

Looking back then over a period of 50 years, we see steady accumulation of a tremendous volume of literature on so-called research on these products, a very great deal of which was presented once to intelligent audiences of listeners and readers, and promptly filed away and forgotten. Probably much of it could well be forgotten, and the literature left extant would be the better for the omission because of the confusion created by it. However, tests, investigation and research in these industries has but followed the same course as in all industry. A particular collection of data, an observed phenomenon, or the hypothesis of some investigator, or a mere observer (such as a college professor or an editor!), may be of no interest or value at the moment but that is no assurance that it may not at some future time provide a clue to a valuable truth. This has happened time and again in all the sciences, because researchers looking for something else don't see it at the time.

The scientific discoverers of the 18th and 19th centuries operated under especially favorable circumstances for the simultaneous advance in all branches of science. They were few in number and quite generally in communication with each other—and unhurried. Thus each was able to keep track of what the others were doing and all had an expert knowledge of existing science in all its branches. They were able to see relationships and general truths and principles which had broad applications. This is probably the reason that so many fundamental truths were established at about the same time in astronomy, mathematics, physics, chemistry and all the sciences then known.

Such a period will never be again because science has so expanded and branched out into so many new fields that an expert knowledge of only one small branch, such for example as physical chemistry, requires a man's lifetime of application. Under such con-

ditions we are apt to lose sight of the one great truth that all science springs from a single source—Nature—and that in reality we never create anything, for that is beyond human faculties; we are only discovering applications of natural laws, or truths, about creation not previously perceived.

The research work so far accomplished in cement and concrete has helped and is helping to prove the universality of many such truths, even though the investigators and laboratory testing engineers may not now be fully aware of it. The tendency has been to view the problems of cement and concrete as peculiar to these materials. Actually, of course, as some of the more farsighted researchers now realize, the phenomena of cement and concrete will eventually be explained by the same laws or truths that govern similar natural phenomena in all silicate substances under like chemical and physical circumstances. More and earlier familiarity with basic research in the fields of geology, petrology, mineralogy, physical chemistry, etc., would have suggested much faster and more thorough research in cement and concrete—provided of course it could have been financed.

What is needed are researchers who in addition to special knowledge in a single field of science, also at the same time possess a wide, deep and comprehensive knowledge of every other allied science. Such a man would have to spend a lifetime relating a few threads of data gathered from thousands of volumes on his own industry with the digested data of all the other sciences, so that the present confusion and cobwebs could be swept aside and really basic truths stand out. But who is going to provide a living for such a scientist, if a capable one can be found? All present scientists are specialists in some one field. Their salaries are paid because someone is interested in that field. Obviously, it can be done only by some philanthropic institution or by the government. It seems to us, that if the national government is so concerned about our shortage of scientists and a means to educate them, it could well devote some of its efforts to educating just a few scientists with so broad as well as so special a knowledge as to tie together the loose ends of all our present-day sciences. That perhaps could do much to renew the faith that 18th and 19th century pioneers of science had in the grand scheme of the universe, the actual unity of the infinite universe, and the ultimate simplicity of the system of laws under which it operates.

END

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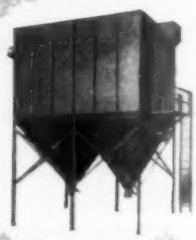
chemicals	13	28
chemicals	17	25
chemicals	14	19
refractories	35	54
refractories	8	27
mining	8	90
rubber	37	48
cement	15	31
stone products	14	15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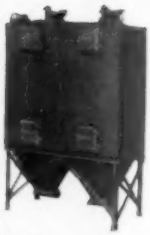
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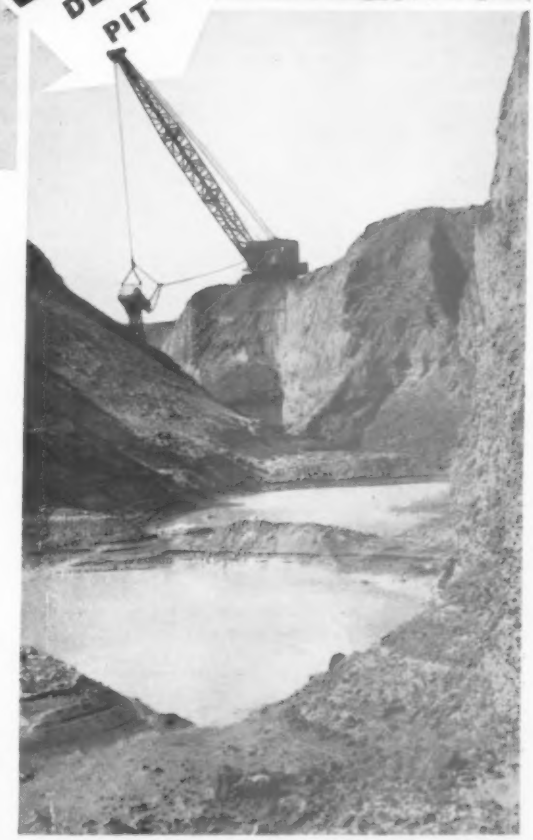
These two different jobs show you how you can always rely on Lorain reliability — regardless of the job requirement — regardless of the size you need. From 3/8 to 2½ yards as shovels, 7 to 75 tons as cranes, on crawlers or rubber tires — Lorain has profit-producers for your job.

• MESHBERGER STONE CO., INC., Columbus, Ind. uses its 2-yard Lorain (above) around the clock to dig and load limestone from an 18-ft. face into trucks. It works 22 hours out of 24. MESHBERGER OWNS 4 LORAINS.

• OPITZ SAND & GRAVEL CO., Denton, Texas OWNS 3 LORAINS. At right, its 1¾-yard Lorain Dragline with 70-ft. boom loads out sand and gravel at a washing plant. It also strips 20 foot of overburden. This Lorain has handled 3,000 yards in a 10-hour day — sufficient to easily keep up with plant capacity.

• Many models of the complete Lorain shovel-crane line have the following profit-producing features: the stronger, yet lighter, Lorain square-tubular-chord crane boom; 2-lever, "Joy-Stick" air power controls that permit easy, effortless, simpler operation; and the modern "Shear Ball" turntable mounting which eliminates the constant adjustment, maintenance and lubrication problems of other designs. See your Thew-Lorain Distributor for details.

THE THEW SHOVEL CO., LORAIN, OHIO



THEW LORAIN®
RELIABILITY IN ACTION

Enter 1069 on Reader Card

NEW

LITERATURE

Dust collector

NATIONAL DUST COLLECTOR CORP. has released leaflets describing its Hydro-Filter dust collector that cleans itself. Some of the typical uses are for dryers, kilns and coolers, crushing and grinding. Capacity charts, specification and dimension data of the Hydro-Filter types IC and RC are given.

Enter 513 on Reader Card

Cone crusher care

NORDBERG MFG. CO. has prepared Bulletin 116A to aid users of Symons cone crushers in securing the best performance and efficiency from their crushers. Some of the more common problems and faults encountered in crusher operation are discussed.

Enter 514 on Reader Card

Engineering service

VERN E. ALDEN CO. has prepared a 24-page brochure, in color, giving a picture of their organization and the work which they are doing for their clients. Featured is the progress in 1957 and objectives for 1958; a short history of the company, partnership, personnel and facilities.

Enter 515 on Reader Card

Grinding mill

D'ORE MILLS, INC. has published a 15-page bulletin describing its grinding mill unit for controlled production of ore, rock and rock-like materials into most any desired gradation pattern of mesh-sized products.

Enter 516 on Reader Card

Clamshell buckets

ERIE STRAYER CO. has published a data sheet covering its 2-line clamshell buckets. Specification charts are provided for every series of buckets and uses for each type are suggested.

Enter 517 on Reader Card

Cranes

THE THEW SHOVEL CO. has prepared a booklet describing Lorain 2½-cu. yd. 85A crawler and 7-ton SP-107 self-propelled Moto-Crane. Illustrations are provided along with specifications. Other models in both lines are enumerated, along with their capacities.

Enter 518 on Reader Card

Manganese steel parts

TAYLOR-WHARTON IRON AND STEEL CO. has issued Bulletin 350 describing Tisco manganese steel parts for crushing and pulverizing equipment. Photos and a short history of the Tisco manganese steel are included.

Enter 519 on Reader Card

Materials handling

LOAD LUGGER, INGERSOLL KALAMAZOO DIV., BORG-WARNER CORP. has released Bulletin 457 describing the Load Lugger system of materials handling. On-the-job photos illustrate various uses. Accessories are described and specifications are included.

Enter 520 on Reader Card

Bag stacker

POWER-CURVE CONVEYOR CO. has published Bulletin 75 describing a portable power driven conveyor for loading bags and packages on boxcars and trucks. The unit also contains a stacker belt.

Enter 521 on Reader Card

Tractors

MASSEY-FERGUSON INDUSTRIAL DIVISION has made available a catalog containing data and specifications on its 1001 and 202 Work Bull loaders and Davis tractors, backhoes and fork lifts.

Enter 522 on Reader Card

Vibrating screens

SCREEN EQUIPMENT CO., INC. has brought out Bulletin No. 2 describing its line of vibrating screens for use in screening, sizing, grading, dewatering and separating sand, gravel and agricultural limestone and other mining operations. Featured are the Seco single, double and triple-deck models.

Enter 523 on Reader Card

Spherical roller bearing

DODGE MANUFACTURING CORP., in Bulletin A668 describes Spher-Align, a spherical roller bearing pillow block. Data on the bearing, Micro-Mount housing, seals, lubrication and sizes are furnished and diagrams, specifications and a selection chart for specific applications are included.

Enter 524 on Reader Card

Drill

MOBILE DRILLING, INC. has prepared a bulletin describing its B-40 Explorer drill. The unit is hydraulically powered and designed for coring in hard rock formations. Drilling speeds range from 50 to 600 rpm. Diagrams and specifications are included.

Enter 525 on Reader Card

Bentonite testing

SOILTEST, INC. has published a bulletin on bentonite testing covering the Steel Founders' Society specifications for western bentonite, designation 13T. Photographs and graphs plus testing formulae, technical requirements and apparatus needed for the tests illustrate the text.

Enter 526 on Reader Card

Electric pumps

THE JAEGER MACHINE CO. is distributing a brochure on its electric pumps ranging from 1½ in. to 10 in. Photos, diagrams, charts and specifications and a brief discussion on several models of Sure Prime centrifugal and caisson pumps are included.

Enter 527 on Reader Card

Pulverizer-crushers

DAY PULVERIZER INC., Division of Southern Machine Co., Inc. has issued Bulletin 47-C-52 covering its swing hammer pulverizer-crushers for custom or commercial rock crushing. The complete line of pulverizers and accessories is described and illustrated and detailed specifications and general dimensions in inches are listed.

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END

Which is the Best Screen for your job?

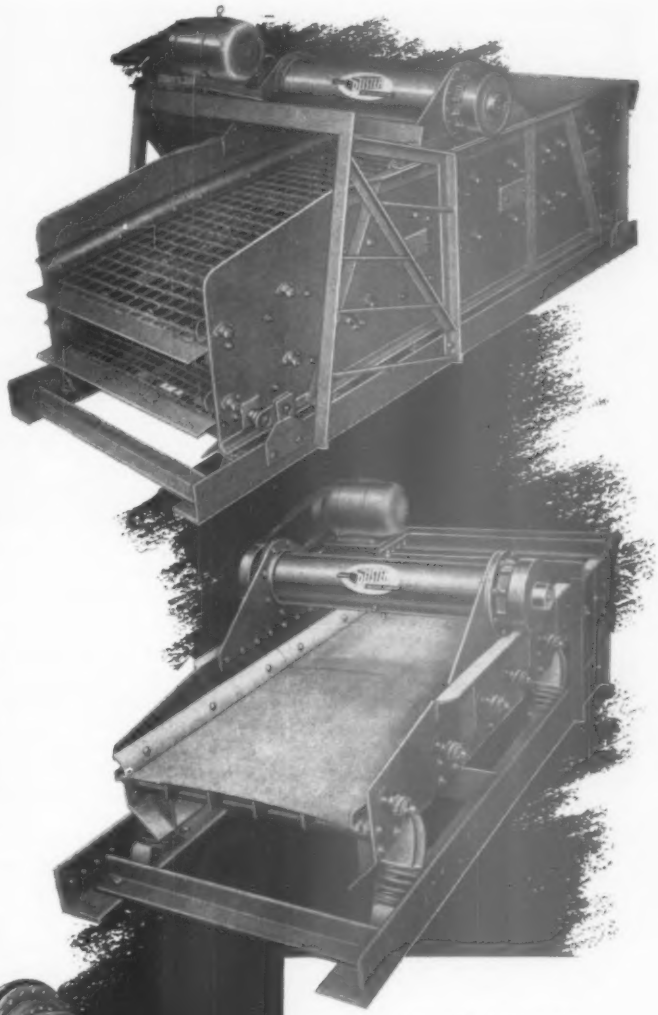
The vibrating screens you select to meet today's extremely competitive conditions must be highly specialized machines . . . designed especially to handle each of *your particular jobs*. And that's why Deister builds screens in four distinct *types* and in a complete range of *sizes*. For example:

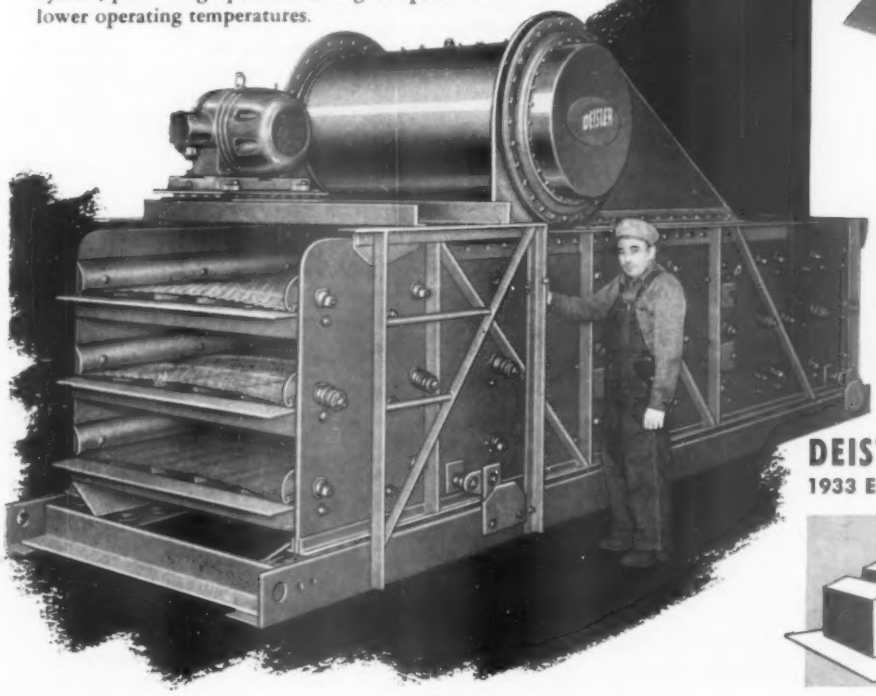
Type UHS. Deister Type UHS Screens are built in a full range of sizes to meet any heavy-duty screening job. Extra heavy-duty types are available for scalping and coarse sizing. The Deister principle of opposed elliptical throw provides maximum capacity and efficiency in sizing. With Deister's exclusive Adjustable Slope Screen Panels, the screening angle of every Type UHS may be adjusted exactly at both feed and discharge ends to meet the specific requirements of your job.

Ag-Lime. Deister Ag-Lime Screens (Type USL) are designed to screen damp, sticky material through medium and medium fine screen cloth openings. They apply intense vibration at a relatively high frequency. For unusual conditions they are available with an Electric Screen Heater and a Ball Tray Deck.

Flat Screens (Type UF). If your plant design requires flat or horizontal screens, or if you need increased tonnage but lack the head room necessary to install larger inclined screens, investigate Deister Type UF Screens. They are also unusually effective for dewatering sand, gravel and stone.

An outstanding feature of *all* Deister Vibrating Screens is Deister's Exclusive Oil Mist Lubricating System, permitting operation at higher speeds and lower operating temperatures.





Top: Type UHS Screens are available in 3', 4' and 5' widths; in 10', 12' and 14' lengths; and with single, double or triple decks.

Above: Type USL Ag-Lime Screens are built in 4' x 8' and 4' x 10' single-deck models.

Left: Type UF is built in 3', 4' and 5' widths; in 8', 10', 12', 14', 16' and 18' lengths; in single, double, triple and four-deck models.

DEISTER MACHINE CO.
1933 E. Wayne St., Ft. Wayne, Ind.

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NEW U. S. PATENTS

By OLIVER S. NORTH

Aggregates

2,847,702—Method and apparatus for making spherical, cellular **expanded clay** for use as lightweight aggregate. Fusion of raw material to walls of the furnace is avoided by pressing the clay into pellets and drying them before burning. Spheres of uniform size and density are produced. (to E. Blaha. Assigned to Selas Corporation of America, Philadelphia, Pa.)

2,848,008—Apparatus for controlling, measuring and recording the moisture content of **sand,** such as foundry sand, in accordance with its temperature. (to H. W. Dietert, R. L. Dietert, H. L. Jameson and C. L. Bowman. Assigned to Harry W. Dietert Co.)

2,848,976—A bedding composition for use in racehorse or other livestock stalls consists of plus ¼-in. exfoliated **vermiculite** which has been treated with iodine, a polyhydric alcohol, or a mixture of iodine and a polyhydric alcohol. This mixture protects the animal's feet, and will not be eaten, thereby eliminating the necessity for muzzling the animal. (to J. T. Combs and C. Carlock.)

Mica

2,851,370—A pearlescent coating composition consists of ground **mica** and cellulose lacquer or the like water-insoluble, film-forming lacquer. (to R. E. Blank. Assigned to The Sherwin-Williams Co.)

Cement

2,848,340—A retarded set cement composition comprises **portland cement** with 0.1 to 2.0 percent of a lower alkyl acid phosphate and up to 10 percent of **bentonite.** (to W. J. Haldas. Asgd: Lone Star Cement Corp.)

Gypsum

2,848,209-10—Rotating drum and batch process method for efficiently dehydrating, or calcining, **gypsum** at high speed to produce an improved product. (to C. E. Compton.)

2,848,211—Method for calcining low-grade **gypsum** ores at high speed, whereby a superior product is produced. The apparatus described in No. 2,848,209, above, is particularly designed for use in accordance with the method of this invention. (to R. R. Ruehle and C. E. Compton.)

Borax

2,849,316—About 6 to 9 percent, by weight, of pulverized anhydrous borax, such as **rasorite,** is incorporated into a fire-resistant fiber composition board. (to E. A. Lauring. Assigned to Minnesota and Ontario Paper Co.)

2,849,327—Use of 7½-25 percent **borax** in starch conversion products known as dextrines, British gums, etc. (to J. J. Ryan and R. A. Weidener. Asgd: National Starch Products, Inc.)

Potash

2,849,113—In the froth flotation concentration of **sylvinite,** the relatively coarse middling fraction is separated from the flotation circuit and mechanically sized to at least two, and preferably three, fractions. The minus 28-mesh cut is sent to tailings; the plus 14-mesh fraction is conveyed directly to the final froth product; and the 14- to 28-mesh middling is recycled through the cleaner cells. (to D. J. Bourne and M. H. Harrison. Asgd: Duval Sulphur & Potash Co.)

2,849,287—Improved process for treating **langbeinite** ore to obtain useful products therefrom, especially a wide range of K_2SO_4-$MgSO_4$ fertilizers. (to G. E. Atwood and D. J. Bourne. Assigned to Duval Sulphur & Potash Co.)

2,850,270—Underground solution mining of soluble minerals, such as **salt, sylvinite, kieserite, kainite** and **carnallite.** The mineral bed is first channeled, or fractured, by high-pressure injection. To prevent premature dissolution of mineral nearest the input well, an inhibitor is added to the solvent. Inhibitors include compressed air and rubber. Alternatively, the solvent may be in the form of an unstable emulsion. (to A. W. Hanson.)

Lime

2,850,369—A buffing composition consists of Vienna **lime,** stearic acid, acidless tallow and an anti-slaking additive. (to W. L. Riegler and J. N. Dybalski. Assigned to Armour & Co.)

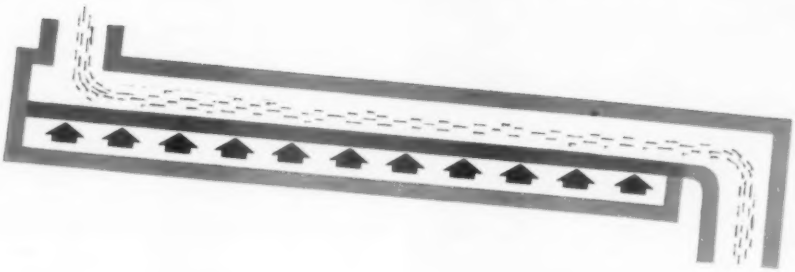
(Continued on page 154)

Copies of United States patents are available at a cost of 25 cents each from The Commissioner of Patents, Washington 25, D.C. For convenience, coupons, each good for one copy of any patent, may be purchased from that official at the rate of $5.00 per 20-coupon pad or $25.00 per 100-coupon pad.

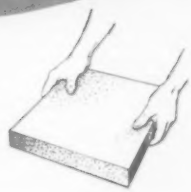
KENNEDY

AIR FLOAT

the better-built, more efficient air-gravity conveyor provides the answers to Dry Solids Conveying



The special porous plate is exclusive with KENNEDY AIR-FLOAT. It is strong, resistant to abrasion and temperature and has a smooth surface texture.



Sections are ruggedly designed, formed on modern production equipment and completely assembled before shipment.

Q. How does AIR-FLOAT work?

A. *The dry material to be conveyed is fed on to a smooth, rigid, porous plate through which low pressure air continuously diffuses. Because the conveyor is inclined about 6 to 8°, the aerated material flows by gravity.*

Q. What distinguishes the KENNEDY AIR-FLOAT from other air-gravity conveyors?

A. *Primarily, the special porous plate. Also the casing is of heavier construction, flanged and channeled for greater rigidity.*

Q. How is this special plate better than other porous media?

A. *The AIR-FLOAT porous plate has literally millions of tiny pores through which the air diffuses uniformly for thorough aeration of the conveyed material. The plate is thicker, stronger, temperature- and wear-resistant, and has a very smooth surface texture.*

Q. How does this improve conveying?

A. *AIR-FLOAT has a much higher capacity than competitive air-gravity conveyors. Blind spots are eliminated and the angle of inclination is less critical.*

Q. What about maintenance?

A. *The KENNEDY AIR-FLOAT is the nearest thing to a completely maintenance-free conveyor that has ever been devised.*

Q. Can turns be made?

A. *Direction changes up to 45° are made with standard pieces. These can be combined for greater angles.*

Q. Are accessories available?

A. *Yes. End and side discharge boxes, splitters, control gates, transitions, bin extractors and required blowers can be provided.*

Q. Have KENNEDY AIR-FLOAT Conveyors been fully tested and proven?

A. *Yes. For more than 12 years AIR-FLOAT Conveyors have been successfully used in KENNEDY-designed cement and lime plants. With this background of experience, KENNEDY is now making AIR-FLOAT available to industry, mass producing it to sell at competitive prices.*

For more information on AIR-FLOAT, ask for Bulletin 58-K.

KENNEDY VAN SAUN

MANUFACTURING & ENGINEERING CORPORATION

405 PARK AVENUE, NEW YORK 22, N.Y. • FACTORY: DANVILLE, PA.

Enter 1067 on Reader Card

NEW U. S. PATENTS

(Continued from page 152)

Clays

2,844,525—Improved solids fluidization method of retorting oil from oil and tar sands, and particularly from the oil-saturated **diatomaceous shale** deposits found in the vicinity of Casmalia, Calif. Large quantities of fine particles from previous burns are added to the fresh feed to prevent agglomeration and clinkering. (to J. W. Scott, Jr., and J. B. Cull. Assigned to California Research Corp.)

2,847,279—In the recovery of the aluminum fraction from Georgia **kaolin,** siliceous **bauxite** or the like, the ore is roasted, contacted with nitric acid, and the undissolved silica filtered off. $CaCl_2$ is added, and the iron dissolved in methyl isobutyl ketone and crystallized off. Aluminum is then recovered from the dilute acid solution by precipitation or crystallization. (to S. Tucker.)

2,847,316—Method of producing mixed oxides consisting of silica and at least one other metal oxide, preferably aluminum and/or zirconium oxides. Georgia **kaolin** or Arkansas **bauxite** is used as the source material. The product is used as a reinforcing filler for elastomers and in pigments, etc. (to L. P. Michel and T. H. Goodgame. Assigned to Godfrey L. Cabot, Inc.)

2,848,346—**Kaolin** is used as the raw material for the production of white zeolitic fillers or pigments which are chemically analogous to known zeolites and have extremely small particle size and other special and desirable properties for use in inks, rubber, paints, etc. Initially, the kaolin is reacted with H_2SO_4 in an aqueous slurry. (to O. L. Bertorelli. Assigned to J. M. Huber Corp.)

2,848,422—In the preparation of a hydrocarbon cracking catalyst, prepelleted or granulated **kaolin,** such as Edgar Plastic kaolin or the like, is sulphated by contacting it with SO_3 gas at elevated temperature. (to J. J. Donovan and T. H. Milliken, Jr. Assigned to Houdry Process Corp.)

2,848,423—Process for preparing solid adsorbents and contact materials from **kaolin,** for example Edgar Plastic kaolin. Process involves removal of plus 2-micron particles prior to pelletization of the raw material. (to G. A. Mills and G. Talvenheimo. Assigned to Houdry Process Corp.)

2,850,843—Use of **bentonite** and other clays in a subsoil irrigation system. A layer of bentonite is installed under the topsoil, with or without connecting clay-filled bores that penetrate down to the water table to bring water upwards by capillary action. Suitable for use as capillary material are **diatomite, fuller's earth, kaolin** and exfoliated **vermiculite.** (to T. M. MarBury.)

Fluorspar

2,849,307-8—A protective flux for uranium and uranium alloys consists of calcium fluoride or **fluorspar,** uranium tetrafluoride, and magnesium fluoride or calcium chloride. (F. Foote. Assigned to the U. S. Atomic Energy Commission.)

Sulfur

2,850,271—Novel method for recovering **sulfur** from offshore orebodies, wherein the collapse of the surrounding limestone does not interfere with recovery of the mineral, such as by necessitating drilling of new holes. A vertical shaft is sunk to a level below the orebed, and a drift driven beneath the sulfur bed. Solvent pipe entries are drilled upwards into the deposit, and a type of solution mining instituted, using the shaft for both input and output. (to B. Dykstra. Assigned to Shell Development Co.)

END

Change motors in minutes—

with FALK *all-steel* MOTOREDUCERS

No long and costly "down time" involved

Motors can be interchanged or replaced *in minutes* with the all-steel, All-Motor type FALK Motoreducer. No long and costly "down time" is involved in making the change!

Best of all, replacement is not limited to original make of motor—new NEMA frames may be substituted for old. This versatile Motoreducer operates with any make, speed or type of standard foot-mounted motor within its AGMA rating. No modification, no special shaft, no "partial" motor required.

In addition to unmatched motor interchangeability, this dependable gear drive—the "work horse of industry"—offers: widest choice of output-shaft position (horizontal, vertical, right-angle)...any output-shaft connection...any mounting, including wall and ceiling...standard speed range from 1.5 rpm to 1430 rpm. All these advantages, plus proved efficiency, low maintenance and extra-long life, make the All-Motor type FALK Motoreducer your best buy for any job requirement.

Furnished in sizes up to 75 hp with any make, style or type of motor; or, *without a motor if desired.* FALK Motoreducers are available from convenient factory, field or distributor stocks, from coast to coast.

Write for Bulletin 3100

THE FALK CORPORATION, MILWAUKEE, WISCONSIN

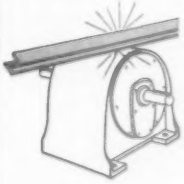
MANUFACTURERS OF:

- Motoreducers
- Speed Reducers
- Flexible Couplings
- Shaft Mounted Drives
- High Speed Drives
- Special Gear Drives
- Single Helical Gears
- Herringbone Gears
- Marine Drives
- Steel Castings
- Weldments
- Contract Machining

FALK

...a good name in industry

FALK "IN-BUILT" FACTORS assure full dependability—better service—longer life

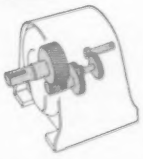


ALL-STEEL HOUSINGS

Rugged, strong, rigid ...all parts heavy steel plate, formed and welded in the Falk Weld Shop.

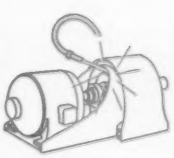
LARGE OVERHUNG LOAD CAPACITY

Large shafts, oversize bearings...rigid mountings with wide bearing spans to handle maximum loads.



PRECISION GEARING

Heat-treated alloy steel gearing, precision cut and shaved after heat treatment to eliminate distortion.



SEALED HOUSINGS

Splashproof, dustproof, oiltight. Dual closures and one-way vents keep oil in, dust and moisture out.

NEW MACHINERY

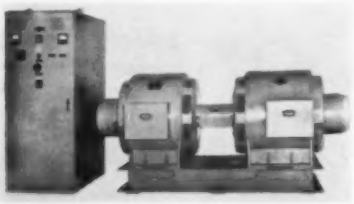
Design portable tandem plant for greater capacity

A DEPARTURE FROM the conventional design of tandem crushing and screening plants was recently introduced. By using a high speed 12 x 36-in. twin jaw crusher for primary crushing, the new machine is said to have from 40 to 100 percent greater primary capacity than plants with a conventional single jaw crusher. Because of this higher primary capacity, it can be operated with the jaw opening reduced, permitting production of a greater percent of crushed and fractured aggregate. Overall plant capacity is increased and the circulating load reduced as a high proportion of material is crushed to finished size by the twin jaw primary crusher.

Claimed to be one of the most versatile plants ever designed, the new Challenger can be fed from the front to produce 100 percent crushed or fractured aggregate, or it can be fed from the rear when a high percentage of crush is not important. Screen decks can be arranged in six different ways to produce from one to four sizes of aggregate ranging from 2-in. ballast down to minus ¼-in. fines. Flop gates in the screen hopper and chute permit blending of finished products in any desired proportion. *Iowa Manufacturing Co., Cedar Rapids, Iowa.*

Enter 101 on Reader Card

Motor generator



SYNCHRONOUS MOTOR DRIVEN frequency changers with 400 cycle, three phase output are now available as large as 250 kw. The new unit consists of a 150 kva., unity power factor, 120/208 v., three-phase, four wire, 400 cycle alternator mechanically connected in tandem to a 250 hp., 440 v., three-phase, 60 cycle, 1,200 rpm. synchronous speed drive motor.

The control cubicle contains all the necessary metering and circuiting, with a synchronous starter for the motor. A matching panel contains automatic voltage regulator and other necessary controls for the alternator. *Kato Engineering Co., Mankato, Minn.*

Enter 100 on Reader Card

Automatic bulk scale

A COMPLETELY MECHANICAL bulk weighing scale will weigh and record dry, granular, sluggish, powdered and dusty materials. Designed to handle either finished products or ingredients in process, the new scale is specially equipped with a totalizing counter for exact recording of all operations. Both scale and counter are totally enclosed.

Designated model MSM, it is a gravity-flow mechanical system with specific applications in the weighing of such materials as chemicals, cement and ores.

Capacities are from 20 to 50 lb. with volumes up to 5 cu. ft. Consistencies vary from ¼-in. lumps down to 300-mesh particles. For powdered or sluggish materials, rounded hopper corners and an optional agitator maintain steady material flow. *Richardson Scale Co., Van Houten Ave., Clifton, New Jersey.*

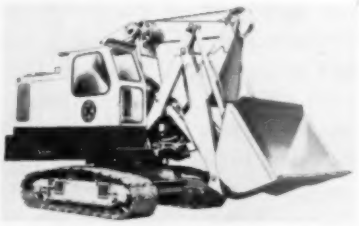
Enter 102 on Reader Card

Stand-still digging, loading, provided by new unit

THE SKOOPER, offering a revolutionary concept in speed loading, has been introduced. By utilizing the fast swing of an excavator turntable and a 7-ft. independent crowding action, the unit can go through numerous complete loading cycles standing in one place. The machine can load 400 tph.

It is available with buckets ranging from 1⅞ to 2½ cu. yd. with a cutting height over 17 ft. A 9 ft. 8 in. maximum clearance at end of the dump is well within the height necessary for loading over side or end of trucks.

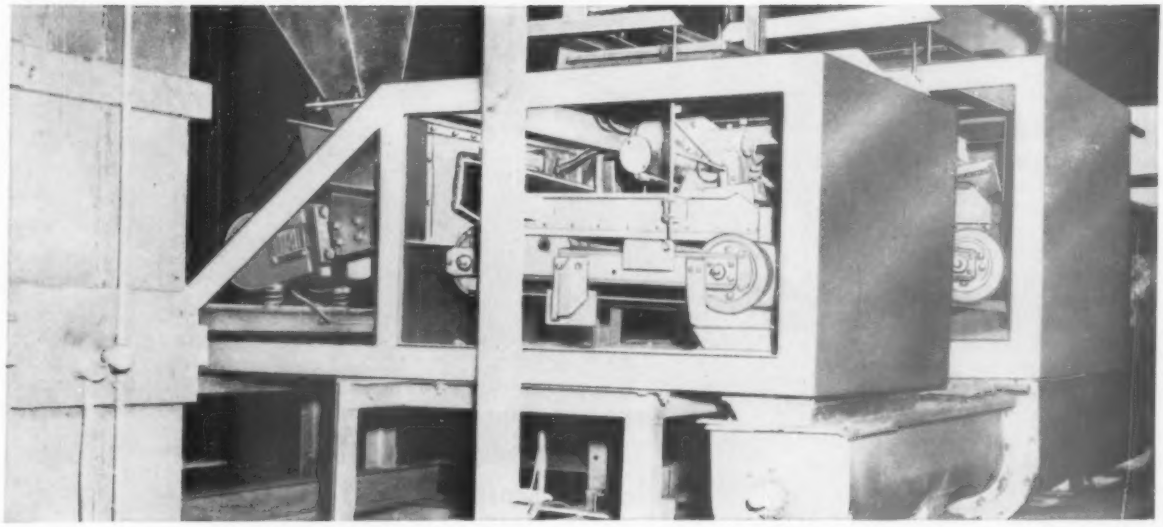
Diesel power, self-cleaning crawlers, enclosed gears, involute splined shafts, antifriction bearings on all major shafts, independent traction and an



easily transported 8 ft. width are other important features which include easy change-over to a ½-cu. yd. hoe, ¾-cu. yd. clamshell or dragline or to a 10-ton lift crane. *Koehring Division, Milwaukee 16, Wis.*

Enter 103 on Reader Card

(Continued on page 158)



SYNTRON "weigh-flow"

GRAVIMETRIC FEEDERS

for automatic, continuous controlled flow feeding by weight

SYNTRON "weigh-flow" Gravimetrics are designed for the automatic, dependable, continuous flow feeding of bulk materials.

Fully automatic. Feed rate is electronically controlled by the load on a scale-suspended, constant speed conveyor belt. Any deviation from the precise, pre-determined weight adjusts the vibration of the supplying feeders to increase or decrease the feed rate to the belt.

SYNTRON "weigh-flow" Gravimetric Feeders will keep mixers and dryers accurately supplied at their best, most profitable production capacities.

Two or more, feeding into mixing and blending machines, will produce mixtures of precisely exact proportions for highest product uniformity.

Simple and functional design, with a minimum of moving parts, SYNTRON Gravimetric Feeders are built for long, dependable, trouble-free service.

SYNTRON Gravimetric Feeders are available in a standard range of sizes and styles. Capacities range from pounds to 100 tons per hour.

Our application engineers will be glad to submit recommendations for your particular feeding-by-weight problem. RP658

Builders of Quality Equipment for more than one-third of a century

Other SYNTRON Equipment of Proven Dependable Quality

designed to increase production, cut production costs, improve products

- Vibrators (bins, hoppers, chutes)
- Vibratory Feeders
- Vibratory Screens
- Shaker Conveyors
- Vibratory Elevator Feeders
- Weigh Feeders
- Packers and Jolters
- Hopper Feeders
- Lapping Machines
- Rectifiers (Silicon and Selenium)
- a-c to d-c Selenium Rectifier Units
- Electric Heating Panels
- Electric Heating Elements
- Sinuated Wires
- Shaft Seals
- Electric Hammers
- Concrete Vibrators
- Paper Joggers

Our representatives will be glad to work with you in selecting the proper equipment for your operation.

Call your nearest Syntron representative

Write for a SYNTRON Illustrated Catalog — FREE

SYNTRON COMPANY
450 Lexington Ave. Homer City, Penna.

Enter 1130 on Reader Card

(Continued from page 156)

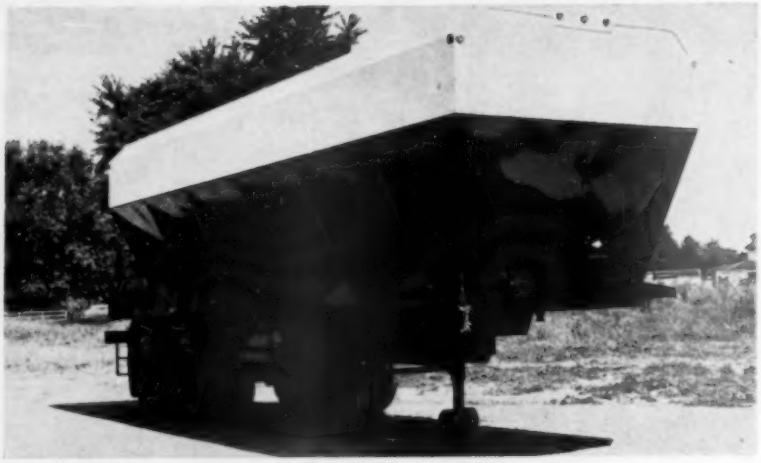
Surface binder

COSTLY LOSSES of fine minerals due to erosion by wind and rainstorm can now be controlled with Aerospray 52 Binder. The new mineral binder is a water emulsion of a synthetic resin that forms a protective crust when sprayed on exposed surfaces of minerals while they lay in open storage or in open railroad cars.

The protective crust is insoluble in water, so that it does not leach away in rain and moisture. Full crust protection is afforded about six hours after spraying. Tests indicate the binder is noncorrosive and nontoxic.

A solution of Aerospray 52 binder is made up by diluting with water any spray strength that may be required to meet prevailing conditions. A solution containing from 3 to 15 percent solids by weight is effective, in general, to meet most requirements. This range of solution strengths corresponds to dilution ratios of from 16 to 1 up to 2.3 to 1. *American Cyanamid Co., 30 Rockefeller Plaza, New York 20, New York.*

Enter 104 on Reader Card



Bulk trailer unit scores well in tests

A NEWLY DESIGNED BULK cement truck will deliver cement by air at an average rate of 40 tons per hour. This rate can be maintained up to a 25 ft. vertical lift and a 20 ft. horizontal run, according to the manufacturer.

The problem of wear in the airlock feeder has been solved. The model tested delivered 2,000 to 3,000 tons of cement before experiencing enough wear to affect efficiency. Design modifications could increase this service life. The cast-iron rotary vane feeder will have the tips and ends hardened.

The body itself is of single-compartment construction with support baffles, with length of 20 ft., width 7 ft. and height of approximately 10½ ft. Sheet thickness is 12-ga. steel, and capacity of about 860 cu. ft. A screw conveyor will be controlled and driven by a positive infinite variable speed control unit to assure accurate metering of cement to the airlock feeder and then to the pneumatic unloading system.

Pneumatic conveying will be handled by a positive displacement, specially designed lightweight blower through a 4-in. system.

Other materials ranging in densities from 10 to 125 lb. per cu. ft., and particle sizes from micron range up to ⅞ x 1¾-in. cubes can be handled, including limestone, lime and gypsum. *Sprout, Waldron & Co., Inc., Muncy, Pennsylvania.*

Enter 106 on Reader Card

Tractor-loader designed as industrial package

A TRACTOR-LOADER INDUSTRIAL package with two and a half times the lift capacity of any previous Ford loader unit is designed to close a gap between medium capacity industrial power equipment and the high capacity, special-purpose earth-moving and construction equipment.

The new tractor has a 7,000-lb. capacity front axle and heavy weight-bearing frame. Capacity to withstand batterings and shock-loads is derived from a new concept of isolating the engine, hydraulic pumps, and steering system from the members of the tractor which take the biggest beating in industrial service. The tractor's Red Tiger engine develops 42.5 drawbar horsepower in the gasoline models. Option of a diesel engine also is available.

The Super-Duty loader, developed for use with this tractor, has a 2,500-lb. capacity, 5,500-lb. break-away limit, lift height of close to 11 ft., and regular material bucket sizes of ⅝ and ¾ cu. yd. Bucket sizes up to 1 cu. yd. and other loader attachments also are available.

Hydraulic power for the loader comes from an independent "universal" hydraulic package, including oil reservoir, pump, oil cooler, filter and control. This package can be obtained as a factory installation.

Two models of the tractor are offered, the 1821 standard-equipped model and the 1841 model which has power take-off and an internal hydraulic system with three-point linkage for rear attached equipment. Both feature a four-speed transmission. Optionally available is a shuttle-transmission for rapid forward and reverse work. *Tractor and Implement Division, Ford Motor Co., Birmingham, Michigan.*

Enter 105 on Reader Card

Industrial radiography

A BATTERY of x-ray tools for the process industries of tomorrow have been revealed. While their usefulness to the many segments of the rock products industries is still to be fully determined, these machines are showing great promise for today's research.

Probably of greatest importance is the new x-ray diffraction unit available to analyze solid crystalline matter for complex compounds or the x-ray emission spectrometer to analyze for chemical elements. An x-ray microscope has been revealed for industrial use which will permit examination of materials which cannot be studied with either optical or electron microscopes. *General Electric Co., X-ray Dept., Milwaukee, Wis.*

Enter 107 on Reader Card

(Continued on page 160)

RAYMOND MECHANICAL AIR SEPARATOR

WITH
DOUBLE WHIZZER
AND
ADVANCED FEATURES
Improved in
- Construction
- Operation
- Control

RAYMOND MECHANICAL AIR SEPARATOR

Showing interior details of fan blades, whizzers and damper slides

RAYMOND Equipment maintains its lead by constant progress in design.

This latest version of the Whizzer Air Separator includes some recent improvements that add to its efficiency and widen its use in the nonmetallics industry.

- **Large fan for increased capacity from separator.**
- **Increased size of beam sections of supporting frame gives greater stability.**
- **Improved lubrication system insures low cost maintenance and operation.**
- **Vertical slide dampers of new design for even wider range fineness control externally without shutting down.**
- **Option of direct motor drive, or speed reducer, as desired.**
- **Special connections and internal air distribution system for maximum drying efficiency on raw mix and cooling of finished cement.**

For top performance and record low cost in classifying cement, lime, gypsum and other nonmetalic minerals . . . specify the Raymond Whizzer Air Separator.

Write for
RAYMOND Catalog No. 76

COMBUSTION ENGINEERING, INC.
Raymond Division

1307 NORTH BRANCH ST.
CHICAGO 22, ILLINOIS

SALES OFFICES IN PRINCIPAL CITIES

Combustion Engineering-Superheater Ltd., Montreal, Canada

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(Continued from page 158)

Truck cabs

SIX-PASSENGER TRUCK cabs for medium and heavy-duty trucks have been introduced. The new Travel-Crew cabs are designed for factory installation on several models of International Harvester trucks.

As a factory option, the Travel-Crew cab can be purchased under a

single warranty on a single order. Feature is the special provision for 60 and 84-in. cab-to-axle dimensions on selected models to permit standard body installations without requiring frame modification in the field. *International Harvester Co., Chicago 1, Illinois.*

Enter 127 on Reader Card

Rear dump unit has variable wheel base

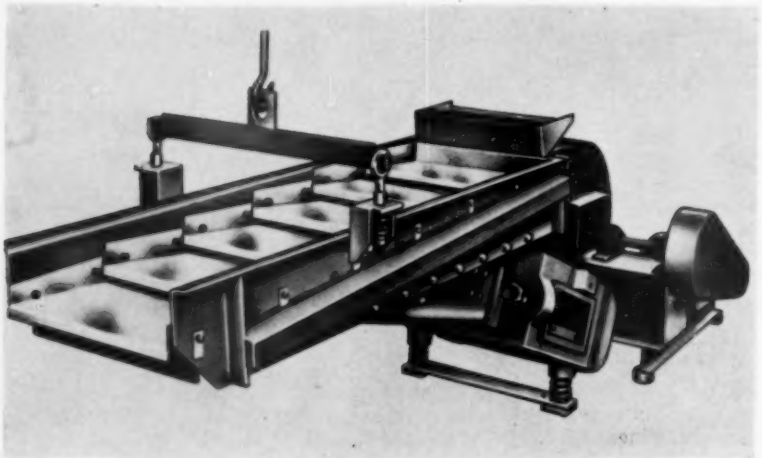
MANEUVERABILITY and controlled dumping are the keynotes of a rear dump, variable wheel base trailer now in production. The trailer is designed for use with the Euclid Model S-12 tractor, and will be known as the S-12 rear dump. All tractor and trailer tires are interchangeable. Rated capacity of the trailer is 22 tons, based on material weighing 2,700 lb. per cu. yd.

Its ability to maneuver easily through tight turns is said to be a distinctive feature of the new unit. When the trailer is in travel position, the power-steered tractor can be cut to a 90-deg. angle, permitting the unit to turn within a width approximately equal to its overall 29-ft. length. In dump position, the wheel base is shortened by 5½ ft., which permits turning within a 24-ft. width.

Smooth, controlled dumping is achieved through the use of a single-stage, double-acting hydraulic hoist, which is supplemented by an integral auxiliary control device. The new body hoist provides fast, smooth and fully controlled action through the entire dumping cycle. Whether the body is empty or loaded there is no slam-over as it reaches its 60-deg. dumping angle, and no slam-down as it returns to the travel position. *Easton Car & Construction Co., Easton, Pa.*

Enter 129 on Reader Card

Feeders dry bulk materials in transit



HEAVY- AND EXTRA-HEAVY-DUTY electromagnetic feeders are now available with special direct-panel heated troughs. This new feature is said to afford rate-controlled feeding and efficient bulk materials in-transit drying.

Effective feeding movement is the result of 3,600 electromagnetic, pitch-directed vibrations per minute, easily controlled through continuously variable degrees of power by the unit's separate controller.

Efficient drying is accomplished by the rate-controlled movement of a layer of material over a cascaded series of electrically heated panels, loosely interlocked to act as louvers, allowing the introduction of forced air from a turbo-blower system through and across the cascading material to dissipate the vapor produced in the drying process. *Syntron Co., 450 Lexington Ave., Homer City, Pa.*

Enter 128 on Reader Card

Roll crusher

DEVELOPED FOR AGGREGATES producers is a 4030 twin roll crusher designed to cut maintenance costs and to provide considerably higher capacities of controlled sizes of product than formerly possible with crushers having the same diameter rolls. The increased capacity results from an increase in width of roll face of approximately 36 percent, and a faster peripheral, or rim speed of approximately 10 percent. The crusher is currently available with two smooth shells and will take a feed up to 4 in. Under these conditions, it is suitable for final stage crushing where controlled gradation and the least possible recirculation of oversize material are required. Power required is in the range of 135 to 160 hp.

One of the advanced features of design is the hydraulic adjustment for crusher setting. This greatly simplifies this procedure in the field and enables quicker change to meet required sizes of material. *Pioneer Engineering, Division of Poor & Co., Inc., 3200 Como Ave., Minneapolis 14, Minn.*

Enter 130 on Reader Card

(Continued on page 162)

THE Toughness Champ WINS BY A TKO

OUR CLUPAK* MULTIWALL

TKO—technical knockout—breaks ordinary bags in test after test. But these new Clupak multiwalls stand up fine! They're that much tougher than the ordinary multiwalls. And this is proved in actual use—in extra rough handling.

The reason: our new multiwalls are made with Kraftsman Clupak paper—its patented, built-in "stretch" gives much greater toughness.

Yet, our new bags *cost no more* than the old ones!

West Virginia's Clupak multiwalls are available now in these types: Pasted Open Mouth, Pasted Valve, Sewn Valve, Sewn Open Mouth and Stepped End.

All of them are lighter and tougher. Try them . . . on your next carload order, let us include a trial shipment of 5,000 of our Clupak multiwalls. Call or write:

*Clupak, Inc.'s trademark for extensible paper manufactured under its authority.

MULTIWALL BAG DIVISION

WEST VIRGINIA PULP AND PAPER COMPANY

230 Park Avenue, New York 17, N. Y.

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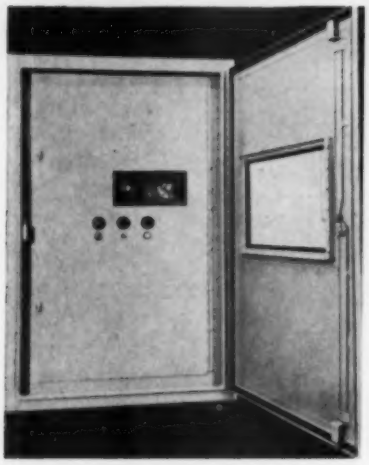
NEW MACHINERY

(Continued from page 160)



Rapper control system

A RAPPER CONTROL SYSTEM for electrical precipitators, known as full-range rapper control, is said to permit ready adjustability of rapping frequency, rapping intensity and the rapping pattern (the sequence and number of blows delivered by each rapper) to fit virtually any dust collection requirement. The unit is adjustable to give a cycle as fast as a complete rapping every 50 sec., as slow as one every 3½ hr. or any desired time interval between these limits. The degree of rapper impact is continuously adjustable from zero to maximum over an unusually wide operating range. And the number of impacts per rapping cycle (two, four or eight per cycle) can also be selected to fit individual requirements. When a variable rapping cycle is chosen, the first blow is soft to remove only the heaviest accumulation; each successive one is stronger than the preceding one until the maximum pre-set impact is reached. On succeeding rapping cycles the pattern, soft to heavy, repeats over and over.

The unit is in the low-voltage category. The timing circuit is completely electronic and is made up of "passive" components. There are no motors, gears, microswitches, mercury relays or other similar parts to require frequent servicing and maintenance. *Western Precipitation Corp., 1000 W. Ninth St., Los Angeles 54, Calif.*

Enter 131 on Reader Card

Flow-rate regulator

FLOW-RATE REGULATORS are designed for control of a wide variety of liquids and light slurries. Measurement and control are incorporated within the regulator, which has only two moving parts and operates with a minimum pressure difference of less than 10 psi. It requires no outside source of power, no straight approach nor downstream piping section and has split-second response with stability, the manufacturer claims. Flow is controlled to within three percent of set point, despite fluctuations in line pressure.

Type F regulators are available in carbon steel, #316 stainless and special alloys for flows from .02 to 550 gpm. with each size providing 15 to 1 flow rate adjustment by means of an individually calibrated linear dial. *W. A. Kates Co., Deerfield, Ill.*

Enter 132 on Reader Card

Sifting screen uses sonic vibration principle

THE PRINCIPLE OF SONIC vibration is applied to industrial sifting processes in the NoVo screen. Infinite industrial uses are forecast; applications in the cement industry are being explored in pilot-plant testing by a major cement manufacturer.

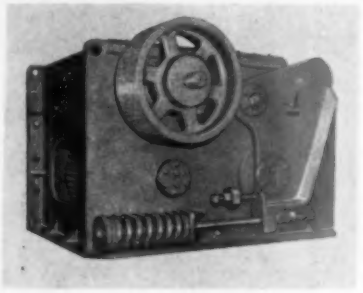
By vibrating the screen over which material passes, rather than the frame to which the screen is attached, the unit achieves considerable savings in energy. The manufacturer claims a savings in power of two-thirds over mechanically operated sifting devices, while increasing handling capacity five times. These sonic machines have demonstrated an ability to separate particles of ½-in. diam. and larger to as fine as 425 mesh.

The eight square boxes visible in the photograph of the model contain electro magnets which create a violent vibratory action on the screen mesh beneath. Through harmonics the basic oscillation of 120 cycles per second is often built up to more than 6,000 cycles per second. Clogging is said to be virtually impossible as vibrations are carried uniformly to every part of the screen.

Developed in Germany by Rhewum, the screens are being manufactured and sold in the United States, Canada and Mexico through an exclusive licensing agreement by: *United Specialties Co., 9705 Cottage Grove Ave., Chicago 28, Ill.*

Enter 133 on Reader Card

Roll crushers



TWO ROLL CRUSHERS in sizes 24 x 20 in. and 30 x 24 in. have been announced. Rolls are of manganese steel and are furnished either both smooth, both corrugated or one of each. These pressure rolls are turned by steel cut gears running in oil for greater efficiency and long life as well as quieter operation. Heavy-duty, self-aligning spherical roller bearings carry the loads in these crushers.

Through heavy-duty tension springs, one roll is fixed and the other floats, supplying ample crushing pressure yet relieving undue strain resulting from tramp iron as well as any other foreign materials.

According to manufacturer's specifications, horsepower required for the smaller unit is 75 to 125 hp. while the larger one needs 100 to 200 hp. Respective weights are 12,000 and 16,000 lb. *Eagle Crusher Co., Galion, Ohio.*

Enter 134 on Reader Card

Rock drill

DEVELOPMENT of a powerful and fast-penetrating rock drill particularly suited to drifting and tunneling as well as stoping operations has resulted in the Atlas Copco Tiger. The high-speed drill is equipped with an integral type pusher leg incorporating a retractable piston rod. Fingertip controls for the 60-lb. drill are located on the backhead.

The Tiger's 3,050 short-stroke blows per minute reduce recoil to a minimum, assuring ease in collaring. Designed for holes up to 18 ft. or more in depth, the drill offers high rate of penetration.

An automatic control begins flushing water flowing as soon as the throttle is opened. The drill also is equipped with a constant blow feature which sends air through the machine as soon as pressure is turned on, preventing water and dirt from entering the machine through the rotation chuck.

Standard rotation for the drill is on the up-stroke although machines also are available with down-stroke rotation mechanism. A single air supply powers both the drill and its matched BMT 50 pusher which is connected to the drill by a spring-loaded swivel elbow. The Tiger draws 124 cfm. at 85 psi. Piston bore on the new machine is 2 15/16 in. and stroke is 1¾ in. *Atlas Copco, Paramus N.J. and San Carlos, Calif.*

Enter 144 on Reader Card

Crawler shovel

A 1½-CU. YD. SHOVEL, the Model 2300, is said to be easily converted to 1½ cu. yd. clamshell or trench hoe, 1½ to 2½ cu. yd. dragline or 35-ton crane. One new feature of the model is the hydraulic jack adjustment of the crawler drive. This feature is patterned after "big machine" design to assure even crawler tension at all times.

The king pin is forged and heat treated. Also featured is the new flat-design 62-in. roller path which allows more precise adjustment between the house rollers and the king pin to minimize strain on the king pin.

The new model has only 11 gears in the upper deck machinery. "Power-flo" design and slide-pinion arrangement are said to add to the simplicity of the machinery, speeding the working cycle, adding power to the operation and minimizing the amount of maintenance and service time necessary. Also cutting the necessary service time is a central lubricating point from which all major grease points can be reached at once. *Manitowoc Engineering Corp., Manitowoc, Wis.*

Enter 145 on Reader Card

(Continued on following page)

NEW MACHINERY

(Continued from preceding page)

Tractor-shovel

A FOUR-WHEEL-DRIVE, rubber-tired tractor-shovel with 7,000-lb. carry capacity, Model H-70, has been announced. Features of the new model are said to include more power, more traction, stronger components, greater protection against dirt and dust, more efficient torque converter, complete power-shift transmission, power-transfer differentials, power steering, pry-out bucket action, safety boom arms and power-boosted brakes.

New gasoline and diesel engines provide from 105 to 110 hp. Diesel engines are available in either two or four-cycle types. Improved weight distribution provides an additional 1,500 lb. of weight on the rear wheels, making possible better traction and greater digging effort.

Heavier, stronger components include the main frame, boom arms and bucket linkage. The axle assemblies are from 40 to 80 percent stronger and additional axle width increases stability. *The Frank G. Hough Co., 705 Seventh Ave., Libertyville, Ill.*

Enter 138 on Reader Card

Ceramic lined pumps

A LINE OF SAND AND GRAVEL pumps features solid cast ceramic impellers and suction liners. The new pumps are built in 3 and 4-in. sizes and have rubberlined shells, stainless steel shafts and threaded impellers for easy removal. No adjustments of internal clearances are said to be necessary during the life of the pumps.

Extensive field tests conducted by the manufacturer have proven the ceramic features to be superior to their regular line of rubber-lined pumps for handling abrasive slurries. On the several severe tests handling particularly abrasive materials, the ceramic parts showed no visible wear after 10 months of continuous operation. Normally, rubber parts would require replacement every four to six months. *The Kansas City Hay Press Co., Kansas City 6, Mo.*

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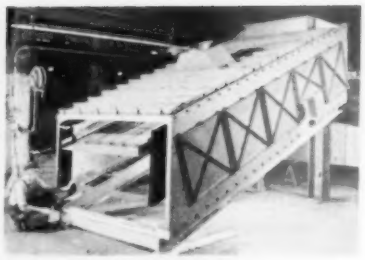


Totally enclosed screen

A TOTALLY ENCLOSED Ripl-Flo screen, Model SH, has been designed for maintaining clean and healthful plants. Equipped with air springs, the standard open-type, floor-mounted screen has a stationary frame enclosure, access side doors and top covers.

Where desired, an exhauster outlet can be provided in the top of the enclosure. The enclosure is bolted to stationary discharge spouting. Provision can also be made for bolting a fines hopper to the stationary supporting frame for dust-free operation. Single and double deck screens of this type in 6 x 16-ft. and 5 x 16-ft. sizes are already being supplied to cement plants in various sections of the country. *Allis-Chalmers Manufacturing Co., Milwaukee 1, Wis.*

Enter 140 on Reader Card

(Continued on page 166)

NEW MACHINERY

(Continued from page 164)

Self-propelled excavators

A SPRING-MOUNTED oscillating front axle on the ⅜-cu. yd. Model SP-107 self-propelled excavator allows the front wheels to hug the ground so the four-wheel drive can apply the tractive effort necessary to carry this rubber-tired excavator over rough, soft ground. There are always enough wheels in contact with the ground to kick the machine over the rough or soft spots.

When maximum crane lifting capacities are needed for crane operation, the front spring action can be "locked-out" easily, to give solid-axle, full seven-ton capacity over front, rear and sides without setting outriggers. *The Thew Shovel Co., Lorain, Ohio.*

Enter 135 on Reader Card

Bin level control

A BIN-VUE LEVEL indicator and control which features an easy-off cover and a fail-safe device has been announced. Access to the unit is gained by simple push-up, push-down and pull-off motion on the single-piece cover. The cover is held in place by compression of an O ring on the mounting flange. A limit switch, acting as a fail safe device, is activated 18 times a minute. This switch may be connected to a relay circuit for automatic control. Failure of any part of the unit will alter the signal and stop or start other equipment.

In operation, a 1/100-hp. motor turns a four blade paddle at 9 rpm. with a torsion spring. The paddle turns continuously as long as no material touches it. When the material makes firm contact with the paddle, the paddle stops. The motor continues to run, turning the spring until it activates a limit switch. The switch kicks off the motor and any other equipment connected to the indicator. As material falls away from the paddle, the torsion spring reactivates the paddle and, in so doing, unwinds from the limit switch, starting the motor and putting the entire unit in operation again. *Convair, Pittsburgh 26, Pa.*

Enter 136 on Reader Card

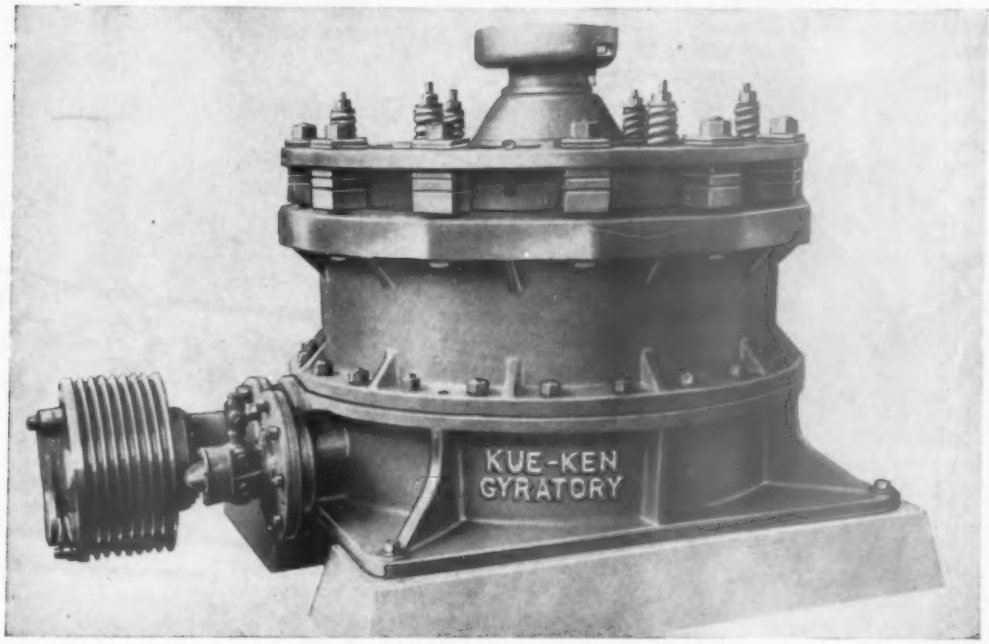
Aluminum dump body

ADDITIONS TO ALUMINUM dump-body designs include six body-hoist units now in operation for transporting and dumping aggregates. The general design and load weight distribution of these units contribute to a "bonus" payload with each truck trip, with a saving in body weight of 40 percent. Aluminum body units are available in capacities up to 22 tons with a bonus payload approximating 6,000 lb. The dump body design has many unusual features including box-type side braces and safety-style sloping running boards. Body side sheets are formed with a full length V crimp for added strength and rigidity. A telescopic hoist is designed and engineered for weight savings, long life and minimum maintenance. *Daybrook Hydraulic Div., Young Spring & Wire Corp., Bowling Green, Ohio.*

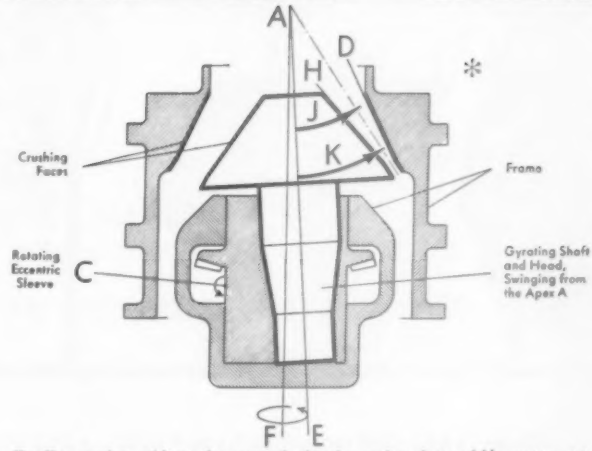
Enter 137 on Reader Card

(Continued on page 169)

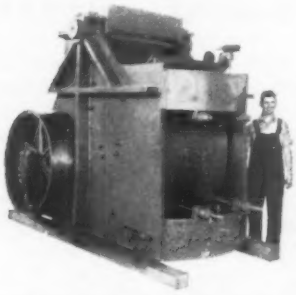
Compact KUE-KEN® for economical gyratory crushing in any operation



Fitting easily where headroom is limited, Kue-Ken gyratory makes profitable secondary crushing practical in any flowsheet. Compact, strong, without excess weight, choke-fed Kue-Ken is adaptable to either a permanent or portable installation. Designed on the exclusive Kue-Ken "crushing-without-rubbing" principle that practically eliminates the main cause of liner wear, Kue-Ken liners give far longer service under continuing, hard materials crushing. For lowest cost-per-ton crushing, design your operation around Kue-Ken jaw and gyratory crushers.



Kue-Ken crushes without the upward abrasive action that quickly wears out liners in ordinary crushers. See how crushing faces pass through crushing zone on arcs J and K to crush rock squarely. Only Kue-Ken operates on this principle of "crushing without rubbing."



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KUE-KEN® CRUSHERS

"Crushing without Rubbing"

STRAUB MFG. CO., INC. 8390 Baldwin St., Oakland 21, Calif.

Jaw Crushers Gyratory Crushers Overhead Eccentric Crushers Revolving Screens Classifiers Feeders Rib Cone Ball Mills Concentrating Tables Vibrating Screens

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Armstrong Whitworth (Metal Industries) Ltd., Authorized Licensed Manufacturer and Distributor. Close Works, Gateshead-upon-Tyne 8, England

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79 West Monroe Street Chicago 3, Illinois

One of a series of advertisements prepared by THE ASSOCIATED BUSINESS PUBLICATIONS

NEW MACHINERY

(Continued from page 166)

Truck crane

A 30-TON TRUCK CRANE, called the Type WT, can be supplied with three different truck mountings to meet varying axle load requirements of the states. The 30-ton truck carrier is 9 ft. wide and the 25-ton truck carrier is offered in both 8 and 9-ft. widths.

Various weights of the unit rigged as a crane with base boom are: 30-ton, 9-ft.-wide truck, 74,270 lb.; 25-ton, 8-ft.-wide truck, 59,250 lb.; 25-ton, 9-ft.-wide truck, 62,750 lb.

The crane features an 8-ft.-wide deck with all operating machinery mounted low and well back of the center line of rotation. Machinery deck and sidestands are constructed as a one-piece weldment. Bearing housings are line bored to insure accurate alignment. Power is transferred from the engine clutch to the operating machinery by a four-strand roller chain drive. *Insley Mfg. Corp., P. O. Box 167, Indianapolis 6, Ind.*

Enter 141 on Reader Card

Sample splitter

AN IMPROVED SAMPLE SPLITTER for the reduction of aggregate samples from sand through coarse sizes has been announced. Because of its ability to handle all aggregates, regardless of size, the new model is said to perform functions for which two or three separate items of equipment were formerly required.

The sample to be reduced is placed in a lever-actuated clamshell hopper where it may be leveled or evenly distributed by hand. The sample may consist of a pound of fine material or more than a cubic foot of coarse aggregate. Lever-opening of the hopper releases the sample precisely on the center line of the splitter chutes below. Each half of the resulting split retains the character and gradation of the original total sample.

The chute consists of sloped ½-in. steel bars with a locating rod passed through their lower ends. The locating rod also allows the bars to be swung to either side, providing adjustment in the width of the chute openings from ½-in. to as much as 6 in. A wing-nut on the locating rod secures all bars in the desired position. *Gilson Screen Co., Malinta, Ohio.*

Enter 142 on Reader Card

Multiwall bag

A NEW CONCEPT in bag construction, a single-gusset sewn-valve multiwall bag, has been developed. The bag stacks uniformly and can be easily palletized.

The advantages of the design include additional usable space created by the flat tube side, more room for product flow during filling operations, and reduction of blowouts. The product fed into the bag does not back up and clog the filler spout.

The extra space created by the flat tube side often permits utilization of a shorter bag and reduces the cost to the manufacturer of bagged products. The single-gusset is effective for packaging powdered materials and sand. *Bemis Bro. Bag Co., 408 Pine St., St. Louis 2, Mo.*

Enter 143 on Reader Card

END

MANUFACTURERS NEWS

George Clark heads Joy executive committee

JOY MANUFACTURING CO., Pittsburgh, Pa., has announced that George E. Clark, president of The Adams Express Co., New York, N.Y., has been elected chairman of the executive committee. Mr. Clark recently had been elected to the company's board of directors.

Louis G. Helmick has been elected executive vice president succeeding A. B. Drastrup who resigned. Mr. Helmick had been serving as vice president and general manager of the industrial division. With Joy since 1947, Mr. Helmick had been manufacturing vice president; manager of the Claremont, N. H., works; and assistant manager of the Franklin, Pa., works.

John P. Cartwright has been elected vice president and general manager of the industrial division. Mr. Cartwright, who joined the company in 1950, has served as government sales representative and as district sales manager in Washington, D. C. He was named sales manager of the division in 1956.

J. Y. Richards has been appointed to succeed Mr. Cartwright as sales manager. Mr. Richards has been serving as manager of the Chicago sales district since 1948. Prior to that, he served in general sales and was assistant manager of the Chicago district.

Easton Car appoints new sales manager

THE APPOINTMENT OF Harry J. Dempsey, Jr. as sales manager of Easton Car & Construction Co., Easton, Pa., has been announced by Cottrell Farrell, president. Mr. Dempsey, a graduate of the University of Pennsylvania, was formerly manager of the New York district. He joined the company as sales engineer in 1950.

J. I. Case Co. acquires interest in French plant

J. I. CASE CO., Racine, Wis., has announced that J. I. Case International, S. A., a wholly owned subsidiary, has acquired the majority stock interest in Societe Francaise Vierzon, French tractor manufacturers, with head offices and operations at Vierzon, France.

On Bucyrus-Erie board

BUCYRUS-ERIE CO., Milwaukee, Wis., has announced the election of Robert G. Allen to the board of directors and the executive committee succeeding William B. Given, Jr. Mr. Allen is executive vice president in charge of all manufacturing and sales. He joined the company in July 1957 as a vice president.

Colorado Iron Works, Mine and Smelter consolidate

THE MINE AND SMELTER SUPPLY CO., Denver, Colo., has consolidated with its subsidiary company, Colorado Iron Works, and all products of both companies will be manufactured by the parent company. Donald J. Drinkwater, formerly assistant manager of the Marcy mill division, is manager of the new manufacturing division of the Mine and Smelter Supply Co.

Dvorak named Iowa Mfg. sales representative

IOWA MANUFACTURING CO., Cedar Rapids, Iowa, has announced the appointment of Leonard Dvorak as district sales representative. His territory will include California, Nevada, Oregon and western Washington, with headquarters in Portland, Ore.

Named Atlas Powder officer

WILLIAM C. LYTLE has been elected a vice president of Atlas Powder Co., Wilmington, Del., according to an announcement by Ralph K. Gottshall, president. Mr. Lytle will be in charge of the company's Explosives Division and assigned corporate staff activities.

Mr. Lytle joined Atlas as a chemist in 1917 after graduating from the University of Colorado. Following service in several explosives plants, he was made manager of the Explosives Division's research division in 1945, becoming assistant to the general manager in 1952, and general manager in 1954. He was named general manager of the Chemicals Division in 1954 and became assistant to the senior vice president in 1956.

Wagner made district manager

CHARLES A. WAGNER has been named Philadelphia district manager of the Wire Rope Division of John A. Roebling's Sons Corp., Trenton, N.J., succeeding John P. Kadlic, who recently was appointed head of the division's New York operation. Mr. Wagner has been associated with Roebling Corp. for the past ten years. He served as a sales representative in both New York and Philadelphia before becoming assistant manager of sales in 1952.

(Continued on page 172)

the measure of quality is

performance

Moly-Cop Grinding Balls perform superbly on toughest grinding jobs because they have the necessary hardness to stand up to the long economical grind. They wear evenly because of that hardness which is uniform right to the core. That's the result of technological control in alloying, forging and heat treating by Sheffield. And the reason why Moly-Cop Balls are THE STANDARD OF COMPARISON AROUND THE WORLD.

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EXPORT REPRESENTATIVES, THE ARMCO INTERNATIONAL CORPORATION, MIDDLETOWN, OHIO

Enter 1102 on Reader Card

MANUFACTURERS NEWS

(Continued from page 170)

Kadlic named district manager

JOHN P. KADLIC has been appointed New York district sales manager for the wire rope and aircord division of John A. Roebling's Sons Corp., Trenton, N.J. Mr. Kadlic replaces Earl A. Frazier, who now heads the division's Seattle territory.

Mr. Kadlic has been associated with Roebling Corp. since 1947, starting as a sales representative in the St. Louis area and for the past seven years he has been in charge of wire rope sales in the Philadelphia district.

Mr. Frazier has been associated with the corporation since 1938 and is well known in the construction industry. Immediately prior to his present assignment, he was in charge of wire rope sales in the New York-New England area.

Ford Company "Big Show"

THE FORD MOTOR CO., Tractor and Implement Division, Birmingham, Mich., recently previewed a new line of industrial equipment to more than 700 distributors and selected dealers at a two-day outdoor show dramatizing the company's advertising and merchandising plans for 1958-59.

Atlas Powder announces consolidation of activities

ATLAS POWDER CO., Wilmington, Del., has announced consolidation of all its eastern explosives production activities at the Reynolds plant near Tamaqua, Pa.

Pacific Car acquires Peterbilt

PACIFIC CAR AND FOUNDRY CO., Renton, Wash., has announced the acquisition of Peterbilt Motors Co. Peterbilt trucks will continue to be produced under the new ownership and L. A. Lundstrom, formerly president of Peterbilt is continuing as general manager. R. D. O'Brien, vice president of Pacific Car and Foundry will serve as liaison officer between the parent organization and Peterbilt.

W. A. Hoy named manager

HERCULES GALION PRODUCTS, INC., Galion, Ohio, has announced the appointment of Walter A. Hoy to the post of advertising manager. A graduate of Bowling Green University, Mr. Hoy was formerly in the advertising department of The Tappan Co., Mansfield, Ohio.

Dings gets rights to make, sell Coronatron

DINGS MAGNETIC SEPARATOR CO., Milwaukee, Wis., secured rights for world-wide manufacture and sale of the "Coronatron," an electrostatic separator, designed and developed by the Quaker Oats Co., to permit wider applications in the purification and concentration of such materials as asbestos, feldspar, phosphate and numerous other nonmetallic minerals.

Willis named vice president

THE ELECTION OF JOHN J. WILLIS as a vice president of Illinois Engineering Co., Chicago, Ill., has been announced by the board of directors. Mr. Willis, who has been serving as assistant general manager and sales manager will continue to serve as sales manager. A graduate of the University of Kentucky, Mr. Willis has been with the company since 1956.

American Cyanamid appointee

JOSEPH D. LOWERY has been appointed assistant general sales manager of the industrial chemicals division of American Cyanamid Co., New York, N.Y. Mr. Lowery, formerly manager of the heavy chemicals department has been associated with the company for 36 years.

Bemis paper department transfer to new plant

BEMIS BRO. BAG CO., St. Louis, Mo., has announced the transfer of the west coast paper specialty department to a new plant in Fullerton, Calif. C. C. Cobb, resident manager of the St. Louis plant, will be resident manager of the new plant.

Waltman named representative

T. B. WOOD'S SONS CO., Chambersburg, Pa., has announced the appointment of Everett F. Waltman as district representative in the New Jersey-New York area with headquarters at New Brunswick, N.J. He succeeds Henry Clark who is retiring at the end of the year. Mr. Waltman was formerly division manager at New Brunswick for Carpenter Steel Co. and before that was with Armstrong Cork Co., Lancaster, as industrial engineer.

Colton Chemical wins MCA safety awards

BOTH PLANTS OF COLTON CHEMICAL Co., Cleveland, Ohio, one located in Cleveland, the other in Elkton, Md., have been awarded certificates of safety achievement by the Manufacturing Chemists' Assn., Washington, D.C.

These awards, given annually to plants completing a calendar year without a single lost-time accident, have been made to only 46 companies representing 397 plants throughout the United States.

Larry Winston made officer

LARRY S. WINSTON has been named vice president of sales according to an announcement by Gilmore Industries, Inc., Cleveland, Ohio. Mr. Winston, a graduate of New York University, was formerly sales engineering manager of Greer Hydraulics, Inc.

New Greer training school

THE GREER TECHNICAL INSTITUTE, Wilmington, Ill., who 20 months ago pioneered a school in the Middle West to train earthmoving equipment operators will start another type of school to train skilled mechanics for the earthmoving industry, at Wilmington, Ill. The course entitled "Construction Equipment Mechanics" will require 540 hours and be spread over a period of ten weeks.

American Hoist names manager—distributor sales

PATRICK BRADLEY has been named manager of distributor sales of American Hoist and Derrick Co., St. Paul, Minnesota. Mr. Bradley joined American Hoist in 1951 as a district representative, assisting with distributor sales and holding sales training schools throughout the U.S. and Canada. In assuming his new duties he will be responsible for distributor sales of hoists and derricks as well as the full line of American truck and crawler cranes—excavators.

Fibreboard service organization created

CREATION OF A NEW SERVICE organization to be known as the technical services department of the Building Materials Division has been announced by Fibreboard Paper Products Corp., San Francisco, Calif. The department will promote the use and sale of gypsum lath, wall board and plaster and all other products manufactured by the company for the building industry.

Baker Truck names manager

GEORGE V. CLARK has been appointed western district manager of Baker Industrial Trucks, Division of Otis Elevator Co., Cleveland, Ohio. Mr. Clark joined the company in 1957 as a sales engineer. Previously he served with the U. S. Marine Corps' transportation division for 23 years.

Appointed Bucyrus-Erie sales promotion manager

BUCYRUS-ERIE CO., South Milwaukee, Wis., has announced the appointment of Charles Parthum as sales promotion manager. Mr. Parthum formerly was with Harnischfeger Corp., Milwaukee, where for the last two years he had been director of public relations, sales promotion and advertising. He has obtained an A.B. degree in psychology from the University of Michigan and an M.A. degree from the University of Rochester.

END

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15-19	8.20
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Mail to: ROCK PRODUCTS, Where To Buy Dept., 79 West Monroe St., Chicago 3, Illinois

FORMS CLOSE
12th of MONTH
PRECEDING PUBLICATION

Jan.	July . . . .
Feb.	Aug. . . . .
Mar.	Sept. . . .
Apr.	Oct. . . . .
May	Nov. . . . .
June	Dec. . . . .

CHECK MONTHS AD TO APPEAR

PRICES SLASHED

CRANES & SHOVELS

Bantam "M-40" Used ⅝ yd. Trench Hoe, mounted on International 6x6.
Quick-Way "E" Used 4/10 yd. Trench Hoe or Dragline, mounted on GMC 6x4 truck.
Lorain "TL-25K" ¾ yd. Crane or Dragline, Cat D315 power, 1951 model. Will rent.
Lorain "TL-20" ½ yd. Trench Hoe or Crane.
Insley Used Trench Hoe Attachment, for K-12, adapted from Unit attachment. Cheap.
Sargent New 25' Crane Boom for "38" or "410". Discounted.

FRONT END LOADERS

Pettibone "10" Used 1-Yd. Tractor Shovel. Torque Converter.
Terratrac "500" Used Crawler Tractor-Shovel, hyd. controlled.
I-H "I-9" R.T. Gas Tractor w/Hyd. Front End Loader.
Ford R.T. Ind. Tractor w/Dearborn Front End Loader.

TRANSIT MIXERS

Jaeger 3 Yd. Hi-Discharge (4¼ yd. Agitator) repaired, blasted & painted. Mounted Chevrolet tandem truck.
Rex 3 Yd. Hi-Discharge (4¼ yd. Agitator), mounted on Chevrolet "5400" Tandem Truck.
Jaeger 2 Yd. Hi-Discharge, priced so low you can buy it for parts. Make offer.
Smith 3 Yd. Hi-Discharge (4¼ yd. Agitator) mounted Chevrolet tandem axle truck, low priced.

MISCELLANEOUS

Jahn "THL-420" Used 20-Ton Flat Deck Low Boy.
Rogers Used 15-Ton Drop Deck Trailer.
Transport "T-8-14" New 8-10 Ton Tag-A-Long Tilt-Top Trailer, electric brakes, Discounted to sell quick.
Owen ½ **Yd. Used** Clamshell Bucket.
Universal "916" R. B. Jaw Crusher*.

NOTE: All this equipment located in our yard except (*). Some of this equipment can be rented. Terms!

120 S. Pierpont Phone 4-6706

EIGHMY EQUIPMENT COMPANY
ROCKFORD, ILLINOIS

LIQUIDATIONS

DONORA ZINC WORKS
DONORA, PA.

1—Traylor 10' x120' Rotary Kiln.
2—Ruggles Cole 90" x 55' Rotary Dryer.
2—Herreshoff Furnaces, 20' dia. 16 hearth.
1—Herreshoff Furnace, 16' dia. 10 hearth.
8—18" Belt Conveyors 28 to 170' long.
6—Bucket Elevators 20 to 65' high.
5—Roll Crushers; 54" x 24", 48" x 24", 24" x 24".
6—Steel Bins; 1, 5, 6 & 7 Compartment, 1100 to 12,000 cu. ft.
Steel Buildings; Structural Steel; Overhead Cranes; Screw Conveyors; etc.

REPRESENTATIVE ON PREMISES

ILLINOIS

2—Bonnot 7' x 120' Rotary Kilns
1—Vulcan 6' x 50' Rotary Kiln.
1—Ruggles Cole 5'x30' Double Shell Rotary Dryer.
1—New Penn. Non-Clog Hammer Mill, size No. 5060.

OTHER LOCATIONS

1—6' x 50' Rotary Dryer, ⅜" shell.
1—5'6" x 50' Rotary Dryer, ⅜" shell.
1—3'x30' Rotary Dryer, ¼" shell.
3—Link Belt Roto Louvre Dryers; 6'4" x 24', 3'10" x 20', 3'10" x 16'.
2—Gayco 8' dia. Air Separators.
1—Gayco 5' dia. Air Separator.

Your Inquiries Solicited—Send For Circulars

BRILL EQUIPMENT COMPANY
2401 Third Ave., New York 51, N.Y.
Tel: CYpress 2-5703

HEAVY MEDIA PLANTS: One semi-portable, bolted construction, 30 TPH, complete with 7 ft. Cone, Densifier, Pumps, Magnetic Separators, Rectifier, Controls, etc. Condition guaranteed, new 1956. One same as above 120 tons per hour with 12 ft. Cone.

REDUCTION CRUSHERS: Two Symons Cone 5½ ft. standard bowl with 200 H.P., 3 phase, 60 cycle, 2200 volt motors and control equipment. Nordberg 4¼ ft. Cone with 200 H.P. motor. Nordberg Gyradisc 54" with 200 H.P. motor.

JAW CRUSHERS: All sizes and makes, 4 x 8 to 48 x 60".

DENSIFIER: One new Wemco Simplex Densifier, 48" x 27'3", double pitch, with flared tank, motor and drive. NEW, UNUSED.

PULVERIZERS: Two Allis Chalmers 8 x 12' Rod Mills with 350 H.P., 3 phase, 60 cycle, 2200 volt motors and control equipment.

AIR SEPARATORS: 5 ft., 10 ft. and 14 ft.

COMPLETE PULVERIZING PLANT with drying, air separating, dust collecting equipment, and screw feeders, boot bucket elevator, etc. with motor and drives.

DRYERS, KILNS, COOLERS: Two 8' x 125' Kilns, one 9' x 130' Kiln, one 10' x 200' Kiln. One 104" x 65' Dryer, one 104" x 70' Dryer, one 5' x 50' Dryer, one 3' x 27' Dryer, one 90" x 55' Dryer, one 6' x 50' Cooler, one 5' x 50' and 5' x 60' Coolers.

CARS: 10 yd. capacity Phoenix, standard gauge, heavy duty, quarry type, automatic couplers.

OVERHEAD ELECTRIC TRAVELING CRANES: One 80 ft. span, 25 ton, 4 motor, 220/440 volt, A.C., trolley new 1955. One 56 ft. span, 3 motor, 110 volt, direct current. The above with or without runways and D. C. Generator.

MINE HOISTS: Nordberg double drum, both clutched, 10 x 10, 1¾" rope, 1200 FPM, forged steel drum shells, complete with all thoroughly modern electrics. One Allis Chalmers 10' x 10', 1¼" rope. Can furnish with either 700 or 400 H.P. motor, 3 phase, 60 cycle, 2200 volt. Offered with or without motor and controls. Other Hoists sizes 100 H.P. to 2500 H.P.

COMPRESSORS: 2—Chicago Pneumatoc OCE, 1100 CFM @ 100# pressure, 20 x 12 x 14, 250 H.P., 257 RPM, with intercooler, aftercooler and control equipment.

WE BUY AND SELL EQUIPMENT THROUGHOUT NORTH AND CENTRAL AMERICA

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Lansdowne Theatre Bldg., Lansdowne, Pa.
Phila. Phones: MAdison 3-6366—3-6261

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Available throughout the U.S.—Items you need may be available near you. Your inquiries would be appreciated.

Buildings	Draglines	Loaders	Pavers
Bins	Ditchers	Locomotives	Rollers
Barges	Dredges	Mixers	Rail
Buckets	Drills	Motors	Scales
Belting	Derricks	Mills	Screens
Cableways	Engines	Machine-tools	Shovels
Cars	Excavators	Pulverizers	Tanks
Compressors	Feeders	Pipe	Tractors
Conveyors	Graders	Pumps	Trailers
Crushers	Generators	Etc., Etc.	
Dryers	Hoists		
	Kilns		

(I can sell your surplus equipment)

ALEX T. MCLEOD
MARIETTA, KANSAS

DEPENDABLE USED MACHINES

Universal 880 Jr. Portable Crushing Plant powered by Cat. 8800

Hopto 120 TM on Chev. truck	½ yd. Bay City 25 hoe	Telsmith Vibro-King screen
Adams Tandem Grader 42-C	American car pullers	Harris Power Horse Hi-Lift
Insley K-12 dragline ½ yd.	#400 Terratrac loader	Cletrac DGH & Drott loader
⅜ yd. Trojan LC100 loader	Unit Model 614 backhoe	Pioneer 30"x200' Conveyor
4-wheel Bay City trailer	Amer. 50B 3-drum hoist	Eagle 24"x25' single screw

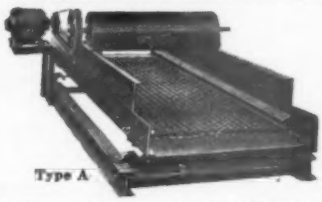
This equipment rebuilt in our modern plant by expert mechanics. Come see it!

10002 Southwest Highway **TRACTOR & EQUIPMENT CO.** Oak Lawn, Illinois

BONDED QUALITY BARGAINS

NEW CURRENT MODELS - IMMEDIATE SHIPMENT FROM OUR FACTORY - WRITE, WIRE OR PHONE FOR FREE CATALOG AND PRICES

BONDED® GENERAL DUTY AND HEAVY DUTY VIBRATING SCREENS



Type A

Type B

For mineral, chemical and other industrial products. Fast, efficient and economical for cleaning, sizing, grading, dewatering. Made in all metals, including stainless steel. Enclosed models for hot materials or dust control. Bonded screens are built for any screening operation, wet or dry.

PERFECT BALANCE AND SHARP ACTION. Eccentric weight mechanism, spring mounted. 1 to 3 decks, 2' x 4' to 3' x 8'. **WRITE FOR "SEVEN SECRETS OF SUCCESSFUL SCREENING" IN BULLETIN NO. 1086.**

Model Number	Screening Area	No. of Decks	Sale Price
124A	2'x4'	1	$ 443
224A	2'x4'	2	472
126A	2'x6'	1	472
226A	2'x6'	2	501
134A	3'x4'	1	504
234A	3'x4'	2	570
136A	3'x6'	1	581
236A	3'x6'	2	688
336A	3'x6'	3	956
138A	3'x8'	1	675
238A	3'x8'	2	815
338A	3'x8'	3	996

FACTORY BALANCED, CONTROLLED VIBRATION. Four bearing positive throw eccentric shaft; 3' x 6' to 5' x 14'. 1 to 5 decks. **WRITE FOR BULLETIN NO. 1087 AND 9 REASONS WHY BONDED IS YOUR BEST BUY.**

Model Number	Screening Area	No. of Decks	Sale Price
336B	3'x6'	3	$1620
436B	3'x6'	4	1685
138B	3'x8'	1	1510
238B	3'x8'	2	1620
338B	3'x8'	3	1735
238B	4'x8'	2	2310
348B	4'x8'	3	2440
2410B	4'x10'	2	2400
3410B	4'x10'	3	2550
2412B	4'x12'	2	2590
3412B	4'x12'	3	2970
4412B	4'x12'	4	3165

BONDED® TROUGHING IDLER CONVEYOR BARGAINS

Remember, You Save Up To 50%

CONVEYOR PRICES INCLUDE BELTING

Complete Pre-Fab sections of 8" Jones & Laughlin Jr. I Beam Frame Conveyors quickly and easily joined together on the job. These beams are rolled with .20% Copper Content. Atmospheric exposure tests disclose that Junior Beams, with .20% Copper have as much as four times the resistance to corrosion as non-copper steels. Braced with structural angle, welded to frame for maximum rigidity. Equipped with 5" roll diameter idlers and return rolls, 20" diameter head pulley and 16" diameter tail pulley, mounted on 2¼" or 2⅞" diameter shaft.

We take our loss on our stock of short length belting. You can save as much as 50% on BONDED CONVEYOR SPECIALS, with conveyor belting in two pieces. Belt is new 4-ply, 28 oz. duck, ⅛" top rubber cover x 1/32" bottom cover Major grade belt and is Fresh Stock made by leading manufacturers. **WRITE FOR BULLETIN #1138.**

Bonded troughing idler conveyors also available in Truss Frame Construction. **WRITE FOR BULLETIN #1189 AND PRICES.**

Belt Width	Length of Conveyor	List Price	Sale Price	Add or Deduct Per Ft.
14"	25'	$1397	$ 722	
14"	50'	2222	1144	$16.84
14"	85'	3377	1733	
16"	20'	1262	636	
16"	45'	2137	1088	
16"	60'	2662	1359	18.04
16"	90'	3712	1906	
18"	25'	1477	794	
18"	45'	2217	1166	
18"	70'	3142	1648	
18"	85'	3697	1933	19.24
18"	100'	4252	2220	
18"	130'	5362	2797	
20"	25'	1517	828	
20"	60'	2882	1533	
20"	75'	3467	1838	20.37
20"	90'	4052	2145	
24"	25'	1590	898	
24"	45'	2430	1330	
24"	70'	3480	1875	
24"	100'	4710	2514	21.78
24"	120'	5580	2950	
24"	150'	6840	3603	
30"	50'	2911	1617	
30"	70'	3871	2119	24.75
30"	90'	4831	2614	
36"	25'	1818	1118	
36"	45'	2858	1678	
36"	60'	3638	2096	27.95
36"	100'	5718	3214	

BONDED HDF SERIES HEAVY DUTY AND PAN FEEDERS

EF SERIES Capacities to 60 TPH

Bonded EF Series Economy Feeders are ideal for confined spaces and in portable plants. For medium duty service. Available with or without hoppers. **Priced From $224.00**

Bonded HDF-18 Heavy Duty Feeders were especially designed for abrasive materials such as Ore, Rock, Crushed Stone, Gravel, Sand, Clinkers, Abrasive Volcanic Ash and Rock. Abrasion Resistant Alloy Steel Plate is used for all parts that contact the material. Capacities to 440 Tons Per Hour.

HDF Series Plate Feeder - Priced From $925.00

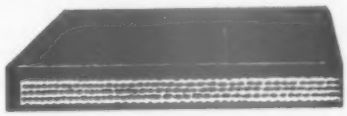
HDF SERIES

Capacities to 440 Tons Per Hour

WRITE FOR BULLETIN No. 1211

NEW CONVEYOR BELTING AT NEW LOW PRICES SAVE UP TO 34%

WE PAY FREIGHT ON 200 POUNDS OR OVER



QUALITY TESTED CONVEYOR BELTING*

Major Brand: 12# to 15# Average Friction Pull. 800# to 1000# Average Cover Tensile.

Heavy Duty 4-ply, 28-oz. duck, ⅛" top rubber cover x 1/32" bottom rubber cover belting having high tensile strength, tough cotton duck, strong carcass and proper flexibility. For heavy boxes, bags and bulk materials. Troughs easily. Famous brands at deep cut prices. Fresh stocks.

Width	Ply	List Price	Sale Price
14"	4	$3.63 ft.	$2.63 ft.
16"	4	4.08 ft.	2.77 ft.
18"	4	4.51 ft.	3.06 ft.
20"	4	4.97 ft.	3.54 ft.
24"	4	5.85 ft.	3.97 ft.
30"	4	7.18 ft.	4.85 ft.
36"	4	8.51 ft.	5.76 ft.

Major Bee Brand: 16# to 19# Average Friction Pull, 2500# to 3000# Average Cover Tensile. Skim coat between plies.

A high grade of heavy duty 4 and 5-ply, 28 oz. duck, ⅛" top rubber cover x 1/32" bottom rubber cover. These belts are for more severe service, high tonnages and abrasion resistance. For handling stone, mineral ores, concrete, cement, coal, and other similar materials, both wet and dry. Belts have molded rubber edges.

Width	Ply	List Price	Sale Price
14"	4	$ 4.31 ft.	$2.85 ft.
16"	4	4.85 ft.	3.22 ft.
18"	4	5.39 ft.	3.57 ft.
20"	4	5.90 ft.	4.07 ft.
24"	4	6.94 ft.	4.60 ft.
30"	4	8.53 ft.	5.66 ft.
36"	4	10.09 ft.	6.84 ft.
24"	5	8.14 ft.	5.38 ft.

*All belting is tested by the Engineering laboratory of one of the largest universities in the United States. It is guaranteed to meet or exceed listed specifications.

Other widths, plies, duck weights and cover thickness available at low prices.

WRITE FOR FREE SAMPLE & BULL. #1209

IDLERS AND RETURN ROLLS SAVE 25% AND MORE

3-roll, 5" diameter Troughing Idlers for:			
14" belt	$18.50	24" belt	$21.25
16" belt	19.25	30" belt	22.00
18" belt	20.50	36" belt	22.75
20" belt	20.75	48" belt	25.50

1-roll, 5" diameter Return Idlers for:			
14" belt	$7.25	24" belt	$ 8.50
16" belt	7.50	30" belt	9.50
18" belt	8.00	36" belt	10.00
20" belt	8.25	48" belt	11.50

All steel. Interchangeable with other well-known makes. Furnished with replaceable prelubricated sealed ball bearings. Maintenance is negligible. **WRITE FOR BULLETIN #1138.**

BONDED SCALE AND MACHINE COMPANY

PHONE Days: Hickory 4-2186 — **WRITE FOR FREE CATALOG AND PRICES** — **PHONE Evenings: AX. 1-2213, HU. 6-3156**

128 Bellevue — **Mfrs. of Scales, Conveyors, Conveyor Parts, Idlers, Vibrating Screens, Crushers and Feeders** — **COLUMBUS 7, OHIO**

$4,500,000 LIQUIDATION

TITANIUM DIOXIDE PLANT

Broening Highway - Baltimore, Md.

1—Traylor 11' x 155' Rotary Kiln, 2 tires, welded, 1" shell.
1—Vulcan 8' x 125' Rotary Kiln, 2 tires, ¾" shell.
2—Vulcan 8' x 50' Rotary Kilns, 2 tires, welded, 1" shell.
2—Vulcan 6' x 60' Rotary Kilns, 2 tires, ¾" shell.
1—Traylor 5' x 50' Rotary Dryer, 2 tires, welded.
1—5' x 24' Rotary Dryer, 2 tires.
1—4' x 25' Rotary Dryer, 2 tires, ⅜" shell.
3—Raymond No. 5057 Five Roll High Side Mills, Double Whizzer.
1—Williams "Standard" Four Roll Mill, Single Whizzer.
2—Abbe 5' x 16' Ball Mills.
5—Mikro Pulverizers, 4TH, 3TH, 2TH.
5—Worthington, Ingersoll Rand Compressors; 1000, 500 & 300 cfm.
5—Dorr Thickener Mechanisms; 50', 40', 16' and 14'.

Steel Buildings; 20 ton Overhead Cranes; Bemis 50 lb. Bag Packer with Sewing Machine; Bucket Elevators 65 to 125 ft. high; Redler Conveyors 5" and 10"; Screw Conveyors 6" and 9", etc.

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Bantury 3A Mixer		Pennsylvania C-3-30 Hammermill, 60 HP
Komarek Greaves Briquette Press 27"x23"	SEND	#60 Williams Hammermill
7'x120' Rotary Kilns		5057 Raymond 5 Roll High Side Mills
8'8"x70' Ruggles-Cole Rotary Dryers		6669 Raymond 6 Roll High Side Mill
8'x115' & 8'x50' Vulcan Rotary Kilns		30" x14' and 40"x13' Pug Mills
9'x125' Allis Chalmers Rotary Kiln	FOR	18" & 24" Troughing Belt Conveyor
11'x155'Traylor Rotary Kiln		42"x500' Steel Mesh Belt Conveyor
5'x40' Rotary Kiln 62' Cooler		18"x16', 26"x6' & 48"x8' Apron Feeders
6'x50' & 6'x30' Rotary Dryers	CAT	18" & 24" Drag Conveyors
705-24 & 502-16 Roto Louvre Dryers		Steel Bins 15 to 200 Ton cap.
4'x6' & 4'x8' Tyler Hummer Screens		60' & 90' Centers Bucket Elevators
Robinson #13 Saw Tooth 15 HP Crusher		Kinney 2" Steam Jktd Rotary Pumps
Jeffrey Hammermills, 24"x18", 20"x12", 15"x8"	1058	75000 gallon Welded Steel Tanks

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60"x48" to 6"x3"
New and used RELIABLE

"Farrel-Bacon" Jaw Crushers

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26 Park St., Montclair, N. J.
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15 New Heil Extra Heavy Duty Dump Bodies with Full Cab Shields, corrugated sub floor, extra scoop end attachment for tailgate, inside body length 125 inches, inside width 82 inches, inside height 23 inches, 5 yard water level, can be built up to 12 yards, stake pockets for build up, complete with Heil Heavy Duty Twin 5 inch hoists, 70 degree dumping angle, with drive line, universal joints, levers and rods, Know power takeoffs, for tandem or single axle trucks, acquisition cost over $2,200.00 each.
PRICED AT $875.00 EACH

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AL. Fishel Equipment Sales Co.
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St. Louis 13, Missouri

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Cedarapids 3042 double impeller. Rebuilt
Cedarapids 3033 Hammermill with new components.
Cedarapids 2033 Hammermill secondary plant on rubber.
Cedarapids 1236 Twin Jaw Crusher. Excellent.
Cedarapids 1236 Twin Jaw Portable Plant.
Telsmith 13 B gyratory crusher.
Scottdale model 63 double roll coal crusher.
26" x 8'4" apron feeder with drive.
Robins 4' x 9' triple deck screen.
New Holland 4' x 12' double deck screen. Rebuilt
Pioneer 4' x 8' double deck screen. Rebuilt
27½ ton, single-compartment 8' x 12' bin.
60-ton, two-compartment, 8' x 18' storage bin with clam gates.
100-ton, two compartment, 13' x 23' bin
Special bins to your specifications.
Conveyors—18"—24"—30"—36". Also conveyor belting.

SHOVELS AND CRANES

P & H 855B-LC, 2-yd. diesel dragline.
P & H 655B1½ yd. diesel dragline reconditioned.
Lorain L-79, 1¼-yd. diesel shovel rebuilt.
Bay City 65, 1¼-yd. diesel crane. 55' boom.
Bay City 60, 1-yd. Diesel Shovel. Excellent
Lorain L-41 ¾-yd. diesel backhoe reconditioned.
Lima 34 Paymaster ¾-yard diesel shovel. Good
Unit 1020 ¾-yard diesel powered shovel-crane
Lorain TL25S ¾-yd. gas clam-crane.
Koehring 304 ¾-yd. diesel shovel.
Koehring 304 ¾-yd. diesel backhoe
Wayne 50B, 25-ton truck crane. 18 mos. old.
Lorain MC-414 20-ton Moto-Crane reconditioned.
Link Belt HC-90 25-ton truck crane
Lorain MC-504W 25-ton Moto-Crane.
Lorain MC-530W 35-ton Moto-Crane
Lorain MC-4 15-ton Moto-Crane.
Lorain TL-20 10-ton gas Moto-crane.
Lorain SP-107, 7-ton self-propelled crane
Michigan TM16, 10-ton gas truck crane.

TRACTORS, TRUCKS, SCRAPERS, ETC.

2—Euclid TS-18 twin engine scrapers.
2—Euclid 18-yd. overhung engine scrapers.
2—Euclid 12-yd. overhung engine scrapers.
1—Euclid 7-yd. overhung engine scraper.
4—Euclid 15½-yd. six wheel scrapers.
2—Euclid 13-yd. bottom dumps. Good.
1—Euclid TC-12 twin engine tractor.
1—Euclid 22-ton rear dump. Good.
1—Euclid 18FD, 15-ton rear dump.
1—Mack LRS 15-ton rear dump. Rebuilt
1—Pullman S-600. 6 to 8 yard scraper.
1—Caterpillar DW-10 hydraulic scraper.
1—International TD-14A tractor with PCU
1—International TD 18 with cable bulldozer blade.
1—Euclid tractor with 3200 gallon water tank semitrailer.
1—Caterpillar D-7 with Hydraulic Angledozer Blade.
1—Caterpillar D-8 with hydraulic angledozer blade.
1—Caterpillar D-4 Tractor only
1—International 300 tractor, with loader back hoe.
1—Allis-Chalmbers HD-19 tractor with cable bulldozer blade.
1—LaPlante choate 13½-yd. Cable scraper
1—Atco H85, 10½-yd. Hydraulic scraper
1—Baker-Lull 65 diesel shoveloader. Reconditioned.
1—Hough HA gas front end loader. Reconditioned.

SHOVEL ATTACHMENTS

Lorain 820, 2-yd., 23' boom, 21' stick
Lorain 50, 1-yd., 21' boom, 17' stick
Lorain 40, ¾-yd., 19' boom, 16' stick.
Lorain 30A, ½-yd., 16' boom, 13'4" stick.
Osgood 903, 2-yd., 24' boom, 20'6" stick.

BACKHOE ATTACHMENTS

Lorain 40A, 18' boom, 7' stick, 28", 36" or 44" bucket.

DIESEL POWER UNITS

Cat. D7700, 74 H.P. at 1000 RPM. Rebuilt
Cat. D8800, 88 H.P. at 1000 RPM.
Cat. D13000, 128 H.P. at 1000 RPM. Rebuilt.
GMC Twin Diesel, rebuilt.
GMC 3021C, 3-cylinder. new.

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105 cu. ft. LeRoi tractair with dozer, backhoe.
105 cu. ft. Ingersoll-Rand gas portable
125 cu. ft. Jaeger gas portable.
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315 cu. ft. Schramm gas portable.
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600 cu. ft. Gardner-Denver diesel portable
620 cu. ft. Gardner-Denver two-stage stationary Rebuilt.

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CRUSHERS

CONE, Symons 7' Super Standard
CONE, Symons 3', Portable
GYRATORY, Kennedy, 49, 38½, 37½
JAW, Mitchell, 18" x 9", 25 HP
DOUBLE ROLL, Gruendler, 24" x 24"
RING ROLL, Sturtevant, 14" x 9½"
BABCOCK & WILCOX Type E32, 75 HP
RAYMOND, 6 Roll, Low Side, 200 HP
RAYMOND, 5 Roll, No. 5057 hi-side Mill

JUST PURCHASED

UNUSED Penna. Crusher Swing HAMMERMILL, Non-Clog, Size 5060, Series DNC, Traveling Breaker Plate. Requires 400 HP motor, 1952.

DRYERS & KILNS

11' x 155' Vulcan Kiln, ¾" shell, UNUSED.
8' x 115' Long—½" shell, 2 tires.
8' dia. x 70' L, Ruggles Coles, Double Shell, Indirect-Direct heat, ½" shell.
(5) 7' x 120' Kilns, 3 tires
5'6" dia. x 50', Renneburg, ⅜" Shell.
6' x 50', Louisville, Steam Tube.
5'6" x 30', ½" thick Shell.
4'8" x 33', ½ " thick Shell.
4' x 24' L, 5 HP, brick lined.

MILLS

COMPEB, Allis Ch, 7' x 24', 450 HP
BALL, Scrubber Hardinge 8' x 48"
BALL TUBE, Allis, 5'6" x 22, 150 HP
BALL, Marcy No. 64½, 125 HP
BALL, Marcy No. 66, new liners.
BALL, Hardinge 4½' x 16"
ROD, Kennedy V-S, 5' x 10'.
ROD, Marcy 7' x 15', 300 HP

MISCELLANEOUS

BRIQUETTING PRESSES, Komarek Greaves, 75 HP, 50 HP, 10 HP
PUG MILLS, 25, 50, 150 HP
STEEL BINS—up to 200 tons storage, all welded construction
ALSO—Steel Trough—Belt Conveyors, Bucket Elevators, Steel Screw & Flight Conveyor, etc.

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3—3078 CFM Inger. Rand 500 H.P. New 1947
1—3876', 1—1578' and 2—1098' Inger. Rand
DIESEL ELEC. LOCOMOTIVES
4—65 ton Whitcomb 2—25 ton & 1—70 Ton
2—45 ton & 1—80 ton & 4—100 ton Gen. Elec.
ROTARY DRYERS & KILNS
36" x 20', 5' x 25', 6' x 72', 9' x 125',
5'x35' Ruggles-Coles XA-8 Dbl. Shell, Comp.
REDUCTION MILLS & FEEDERS
4' x 8', 6'6" x 14'6" & 8'6" x 12' Rod Mills
5' x 10' Kennedy-Van Saun Rod Mill
2—No. 77 & 1—96 Marcy Ball Mills
4¼' Symons Std. Cone Crusher
4'-0" Traylor Type TY Reduction Crusher
30" x 42" & 24" x 36" Pioneer Jaw Crushers
48" x 60" & 36 x 42 Traylor Jaw Crushers
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36" Superior McCully Primary
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24" x 36" Pioneer Jaw Crusher
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17 Speed Reducers 9.37 to 19.5 H.P.
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5' x 12—3 Deck A.C. "Ripl-flo"
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TWO COMPLETE BRIQUETTING PLANTS

Locust Summit, Pa. and St. Nicholas, Pa.

4—Ruggles-Coles Class #XA-18 double shell indirect-direct heat rotary dryers, 104" x 70' x ⅝" welded steel outer shell.
4—Komarek-Greaves briquetting presses, 75 HP, 25 tons per hour.
4—Komarek-Greaves vertical Fluxers (paddle mixers), triple shaft, 150 HP.
4—K-G Horiz. Fluxers 41" dia., 50 HP.
4—K-G Pug Mills, 30" dia. x 14'4" long.
8—Tyler Screens, 4'x8', 4'x6'.
2—42" wide travelling-screen cooling conveyors, total of 950'
2—8'6" dia. x 70' long rotary hot air dryers.
4—36" x 24", 24" x 18" Jeffery hammermills, 50 HP, 25 HP.
3—Robinson Size #13 Sawtooth Crushers.
4—Pa. Crusher #C-3-30 hammermills, 60 HP.
20—Welded Steel bins, cone bottom, from 15,000 gallon to 90,000 gallon sizes.
4—Keeler Boilers 200 HP, 160 PSI.
8—16", 18" and 24" trough-belt conveyors, 100', 250', 500' long.
6—36" & 48" wide apron feeders, 8' long.
8—Bucket elevators, 62' and 90' c-c.
6—500 KVA Transformers.
300—Motors and controls, 1 HP to 150 HP.

ALSO—Chain hoists, steel pipe, valves, hoppers, blowers, misc. equipment, etc.

BUILDINGS—(2) All Steel Buildings 50' wide x 198' long, 60' high under roof trusses, clear span.

REAL ESTATE—7.8 Acres at Locust Summit, Pa. 6.0 Acres at St. Nicholas, Pa. Served by Reading Railroad—With Private Tracks

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650-B Bucyrus Erie Elec. Drag, 195', 16 yd.
15-W Bucyrus-Erie Elec. Drag, 215', 13 yd.
9-W Bucyrus Erie Diesel Drag, 175', 13 yd.
7400 Marion Elec. Drag, 160', 13 yd.
625 Page Diesel Drag, 150', 10 yd.
723 Page Diesel Drag, 130', 10 yd.
621-S Page Diesel Drag, 125', 7 yd.
200-W Bucyrus Erie Diesel Drag, 125', 6 yd.
7-W Bucyrus Erie Diesel Drag, 180', 5 yd.
5-W Bucyrus Erie Diesel Drag, 100', 6 yd.
2400 Lima Dragline, 130', 5 yd.
4500 Manitowoc Drag, 120', 5 yd.
88-B Bucyrus Erie Drag, 90', 4½ yd.
111-M Marion Drag, 80', 4 yd.
1055 PGH Dragline, 80', 2½ yd.
3900 Manitowoc Speedcrane, 100' boom
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750-B Bucyrus Erie 20 yd. Elec. Shovel
5480 Marion 18 yd. Elec. H. L. Shovel
170-B Bucyrus Erie 6½ yd. Elec. Shovel
120-B Bucyrus Erie 4 yd. Elec. Shovel
4500 Manitowoc 5 yd. H. L. Shovel
111-M Marion Standard & H. L. Shovels
3500 Manitowoc H. L. & Standard Shovels
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Large selection of smaller Shovels and Draglines available
Model T-750 Reich Truck Mounted Rotary and Down-the-Hole Drill
McCarthy & Compton Coal Auger Drills
Euclid Trucks, Truck Cranes, Dozers, Scrapers, Front End Loaders

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All sizes, new and rebuilt. Starters, accessories, pulleys and repair parts. Gear motors, Falk Shaft mounted Speed Reducers, couplings and V-belt drives.

EXPERT REPAIR SERVICE
NUSSBAUM ELECTRIC COMPANY
220 E. Douglas Ave., Fort Wayne, Ind.

OUR 50TH YEAR

24" x 85' Channel Frame Belt Conveyor, Walkway.
30" x 62' Channel Frame Belt Conveyor.
20" x 125' Truss Type Frame, Robins Roller Bearing Idlers.
300 Ft. 20" x 6 Ply Conveyor Belt, 95% New.
2000 BBL. Cement Bin, Aggreg. Bin, Elevator, Screws, 4 Yd. Batch.
25, 30, 40 and 50 H.P. Motors.
50 H.P. 100 R.P.M. Gear Motors.
25 Tons Steel Grating for Walkways, 95% New.
4' x 35' Asphalt Sand Dryer, Complete.
25 Yd. Cedar Rapids Secondary Portable Crushing Plant.
Reliance Jaw Crusher 9" x 16".
Acme Jaw Crusher 9" x 16".
Niagara 1-Deck Screen 2½' x 12'.
Niagara 2-Deck Screen 3' x 8'.
Hummer 1-Deck Screen 6' x 5'.
Revolv. Screen 48" x 20', trunnions.
New Universal 1-Deck Screen, 3' x 5'
New Universal 1-Deck Screen, 3' x 8'

WANTED

SMALL GYRATORY CRUSHERS
JAW CRUSHERS—DEWATERING SCREWS—
—SMALL VIBRATING SCREENS—
CONVEYOR IDLERS—VIBRATING FEEDERS,
SYNTRON OR JEFFREY

G. A. UNVERZAGT & SONS, INC.
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Iowa 52"x60" dbl. Impact hammermill
Sturtevant 16" air separator 75 HP elec. motor
Pangborn C11-2, exhaust blower, etc.
Traylor 56"x72" sectional frame jaw crusher
Traylor 4' Model TY crusher. Numerous spare parts.
Symons 4½' cone crusher, std. head coarse bowl
Nordberg Gyradisc 54" 200 HP elec. motor
Belt conveyors 24" 36" 42" var. lgths some w/elec-tro mag. hd. pulleys: 24x24" 36x30" 24x36" 30x42".

CONCRETE MIXERS

Ransome Model 84S, 3 yd. tilting type
Smith 42S, 4 yd. tilting type
Koehring 56S 2 yd non tilting type

TRUCKS—TRANSIT MIXERS

15 Ford F-6 6 yd. end dump. Excel. Reinforced, 1955.
10 Mack LRBW 32 ton rear dump trucks Cummins NH11HB-600 300 HP Diesel Motor Allison con-verter-transmission.
6 Euclid 36 TD end dumps 300 HP Cummins Diesel
2 Int. LF-192 Haw Knox 6½ yd. 1953.
6 Smith tan. ax. Diesel. 1953, 5½ yd. mixing
4 Smith tan. ax. 4½ yd. mixing

CRUSHERS—KILNS—DRYERS

JAW: Arcese 10x36, 15x36, 14x26, 14x28, 10x42, 16x32, 18x32, 22x60, Eagle 10x16, 20x36, Diamond 24x36", Cedar Rapids 16x30, 15x36, 20x36, 25x40, Farrell 10x30, 13x30, 14x36, 18x36, 36x48, Buc-hanan Type C 30x42, 36x42, Traylor 18x36, 24x36, Allis-Chalmers 30x18, Good Roads 10x30, Telsmith 18x32, Pioneer 30x42, Universal 18x24.
GYRATORY: Al-Chal 6, 7½, 8, 9, 10, 12, 16, 18, Telsmith TY 4', 5' Gyrosphere
25D Kennedy Van Saun 12, 37½, 38, 49½"
ROLL: Cedar Rapids 40x30. Pioneer 40x22. Pioneer 30x18. Telsmith 24x16.
HAMMERMILL: Jeffrey Type BG 24x20, Type B 36x24, 36x36, 54x42, Eagle 24x24, Stedman 24x30, 36", 42", Cedar Rapids 50-50, 30x23.
BALL MILL: Hardinge conical 10'x48", 8'x48", 5'x26", complete, motors, Traylor 7'x35'.
TUBE MILLS: Smidth 6'6"x21', 5½x29'.
ROD MILL: Marcy 3'x8' and 5½'x12' center discharge; 3'x6'; 5'x12'
ROD MILL: Marcy 3'x8' center discharge Marcy 3' x 6', Marcy 5' x 12', 5½" x 12' center discharge
AUTOCLAVES: J&C 6'6"x58' Quick Acting; 6'x50'
CONE: Symons 3', 4¼', 7'
KILNS: 4'x42', 5'x30', 6'x50'6", 6'4"x45', 6'x72' Vulcan 9x100, 10'6"x105', 8'x124', 6'x90', 6'x72'.
DRYERS: 6'x80', 6'x72', 5'x24', 4'6"x32', 3'6"x30', 6'x30' 5'x35' rotary current.
COMPEB MILLS: A-C 7'x24', Patterson 7x18.
FEEDERS: Dynatron F35 48x72", 42x60", Jeffrey 35x72".

CRUSHING PLANTS

C-R NEW NEVER USED complete 2236 jaw, 2033 hammermill, material washer, conveyors, motors etc.
Diamond 77, new 1956, 10x36 jaw, roll, comp Port.
Pioneer Port. 10x24 jaw 24x16 roll compl. Diesel
C-R 2540 Prim. Port. Diesel
A-W 61E 1024-10C8 jaw crusher
C-R Primary Port. 22x36 Jaw. Diesel.
Eagle 30x28" single screw-pitral flights washer classi-fier dehydrator

CONCRETE PLANTS AND EQUIPMENT

NEW, complete, Heltzel, 2-48B Smith tilt. mixers, 4 yd. aggr. batcher 1000 bbl. cement etc.
Butler 1200 bbl ground cement silo re-circulating B-K 3 compt. aggr. 180 ton Heltzel 450 bbl. Cement bin. Complete.
Erie Strayer port. New 1955, 40 yds. per hr. 600 bbl. cement silo
Johnson 400 yd 5 aggr. 1500 bbls. cement batch 5000 bbl. silo 3-2 yd mixers
Johnson automatic batch 10,000 bbls. cement storage 3-2 yd mixers; screening equipment.
Johnson TY 22S 2 compt. agg. w/TY1320 cement unit
Blaw-Knox 100 ton 3 compt. aggregate bin
Blaw-Knox Bt'PC 600 bbl cement silo
B-K Bt'PC 400 bbl High cement bin 400 bbl silo.
Blaw-Knox Bt'PC 800 bbl cement bin
Auto-Crete port. batching plant, self contained, elec. up to 150 yds per day; one man operation.
Pre-Mix 150 ton 4 compt. 3 aggr. 1 cement; ground cement silo 2 yd concrete mixer. New 1955.
Erie Strayer Port. 3 compt. aggr. 600 bbl cement B-K 2 aggr. one cement 400 bbl silo. Complete

HYDRAULIC SUCTION DREDGES

10" Portable Diesel powered. Complete.
12" Diesel powered, pontoon mounted. Complete.
Ellicott 8" with cutter. Diesel Hull 48'x16'x3'6".
20' Ellicott Diesel 155'x49'x8'.
8" Hydraulic Diesel. On 32'x8' steel pontoons.
Amsco 10" Diesel power portable. Excellent.
6" portable Diesel complete with cutters, etc.

SCREENS

Trommel 6'x45'3" 75 HP gearhead A.C. motor.
New Holland 4'x12' 2 deck, V-belt drive
Tyler-Hummer 4'x10' 2 deck, new spare parts
Simplicity 5'x12' 2 deck
Pioneer 5'x12' 2 deck 20HP elec. motor
C-R 4'x14' 2 deck 25 HP motor

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HAMMERMILL S-6 Penna 42 x 32

COLLECTOR Ducon #15 Cyclone 11,000 CFM—$\frac{3}{16}$" plate

SEPARATOR Dings magnetic for granular materials. 18" main belt with three crossbelts.

LORAIN SHOVELS L57 & L77 with diesel engines. 1¼ & 1½ yd. Excellent

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Plymouth Meeting, Pa.

SPECIALS

6'-5"x100', 6'x120' & 8'x175' Kilns
10' & 14' Sturtevant Air Separators
12' Raymond Air Separators

CRUSHERS

1—30" x 36", 24" x 36", 18" x 36", 15" x 30", 12" x 24" Jaw Crushers.
2—42" x 16" Allis-Chalmers Crushing Rolls, rebuilt. 36" x 16 rebuilt Sturtevant rolls.
2—24" x 12" Rogers Iron Works Crushing Rolls, Rebuilt.
1—6", 10", 16", 20" McCully Superior Gyratory Crushers.
No. 3 up to No. 12 Gyratory Crushers.

BALL & TUBE MILLS

2—5½'x20', 5'x22', 6'x22', 7'x24' & 7'x35'

DRYERS

8½'x65' & 8'x60

We make new dryers and kilns.

Have you any machinery that you want to sell?

W. P. HEINEKEN, INC.
50 Broad St., N.Y. Tel. Wh. 4-4236

FOR SALE

Gardner Denver 420 Cubic Foot Compressor Powered by Caterpillar D13000 Diesel on 4 Pneumatic Tires. Good Condition $3,150.00
Ingersoll Rand 315 Cubic Foot Compressor. Gyro Flo. GM Diesel Powered On Dodge Truck, Compresser In Excellent Condition $4,150.00
Caterpillar D13000 Power Unit, Complete With Radiator, Steel Skid Mounted, Open Clutch, Outboard Bearing, Flat Pulley. $1,450.00
Caterpillar D17000 Power Unit, Complete With Radiator, Steel Skid Mounted, Closed Clutch, Flat Pulley. $1,450.00
3 New Goodrich 24 ply 18.00 x 24 Tires Nylon Super Traction Treads, Firsts Ea. $550.00
1-New Firestone 20 Ply 18.00 x 24 Tires Rayon Ground Grip Treads, First $500.00
Hough Model HMD Diesel Hydraulic Loader 1½ Yard. 4 Wheel Drive, Good Tires, and Good Condition. $5,250.00

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80 Ton GE Diesel Elec. Loco. New '50.
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44 Ton Gen. Elec. Diesel Elec. Loco.
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50 Ton American Guy Derrick 115' Mast 100' Boom
90 HP Lidgerwood 2d Diesel Hoist.
30 Ton Browning Diesel Loco. Crane
50 Ton Manitowoc 3000-B Crane. Cummins Diesel. New 1951.
2½ Yd. Link-Belt K-595 Crane 120' Boom.
600 CFM I-R Port. Rotary Compressor

WHISLER EQUIPMENT CO.
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FOR SALE

One Insley all steel guy derrick, 94' mast, 85' boom, complete with double drum hoist, bull wheel, and swinging drums. Also one steel hopper, 16' square, 14' deep on straight sides, and 13' on taper.

KLATZKY BROTHERS, INC.
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POSITION WANTED—Have had 15 years experience in the cement industry and 3½ years experience in the lime industry, serving as Quarry Superintendent, Assistant Plant Superintendent, and General Superintendent. Experienced in all phases of operations and production connected with these industries as well as in labor negotiations and supervision. Desire Position as General Superintendent or Manager which offers opportunity commensurate with performance in a portland cement, lime, or related operation which can utilize my experience. Age 41, married, 3 children, available within 30 days. Box Q-56, ROCK PRODUCTS, 79 W. Monroe, Chicago 3, Ill.

POSITION WANTED

French engineer, graduate "specialized engineer in cements" by French State University, at present employed in France by well known American-French engineering firm, seeks an interesting or responsible position in America or Canada, for cement engineering or plant supervision. 25 years field experience in 17 cement plants around the world—dry process (Lepol kilns)—wet process (mainly F. L. Smidth kilns)—extra white cement. 46 years old. Speaks English and Spanish fluently. Soon free for convenient position. Box Q-49, ROCK PRODUCTS, 79 W. Monroe, Chicago 3, Illinois.

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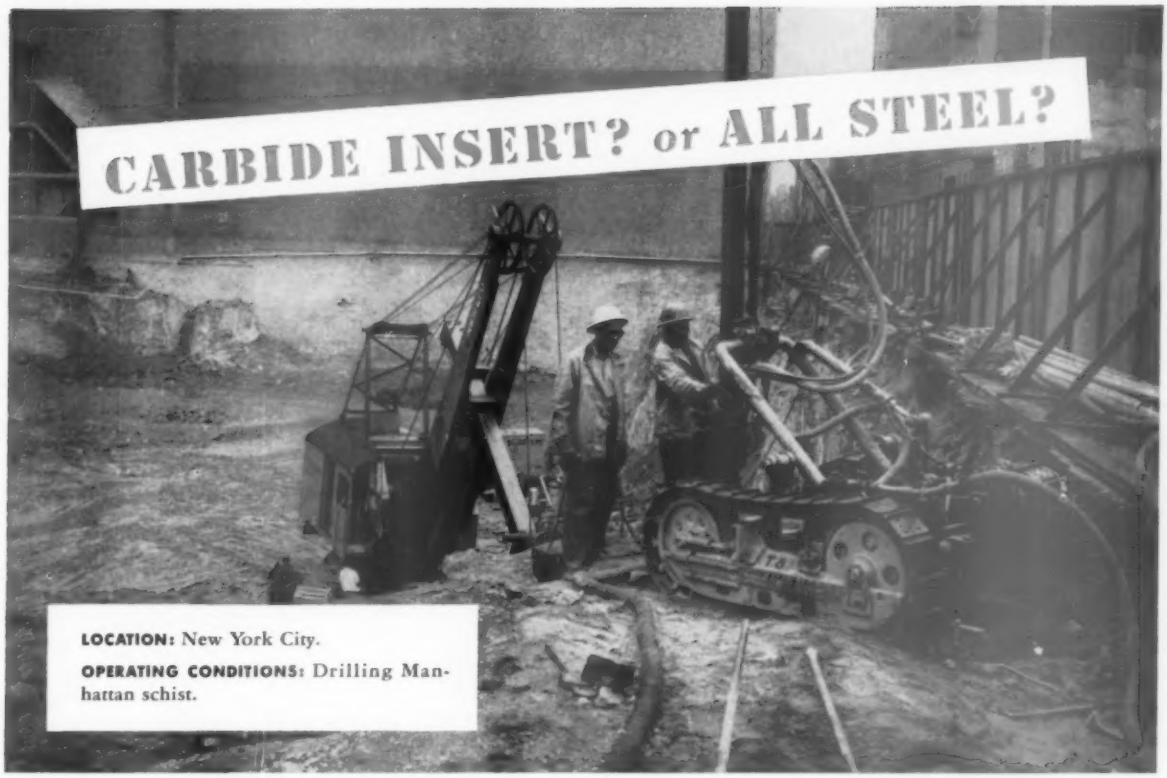

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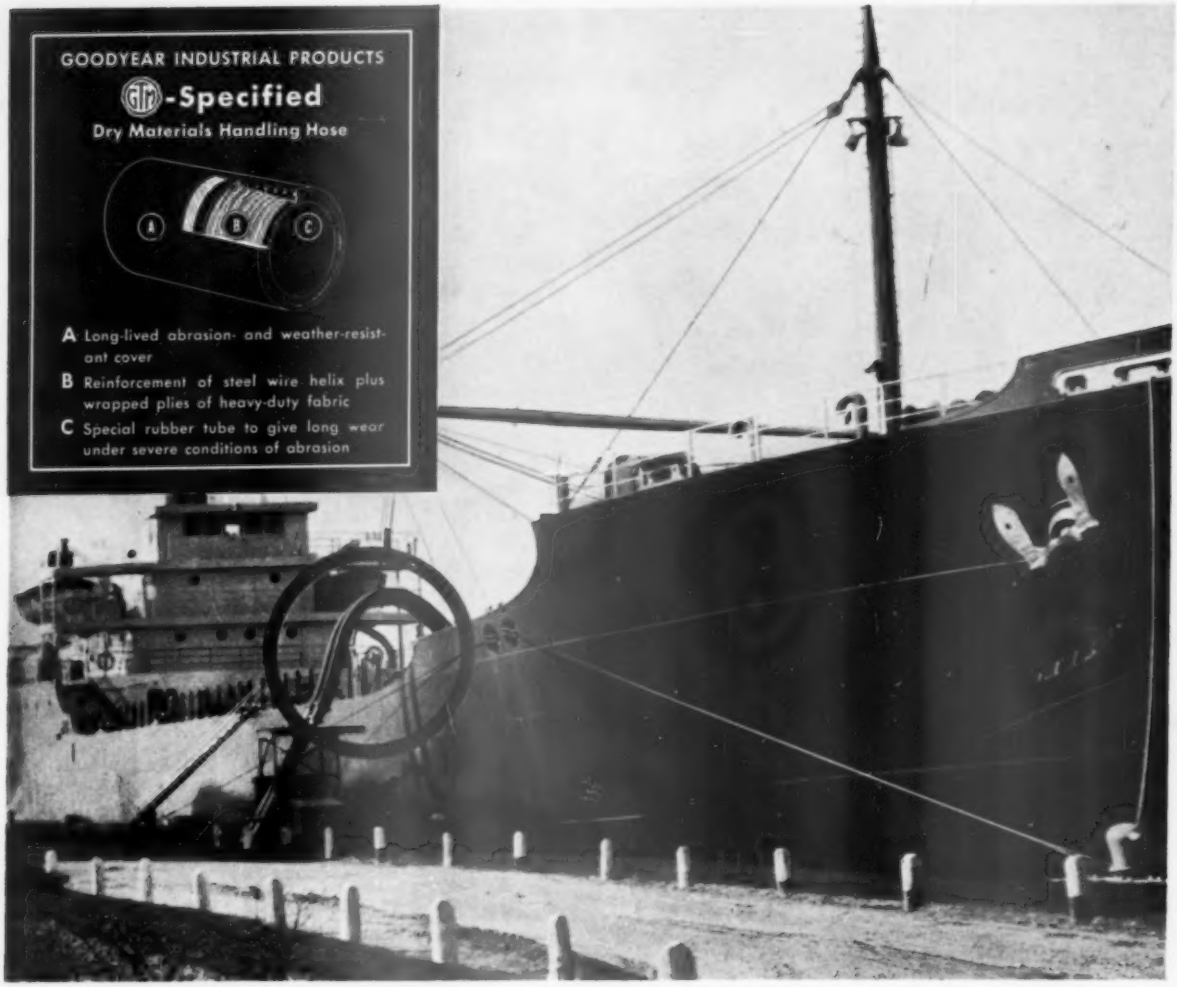

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